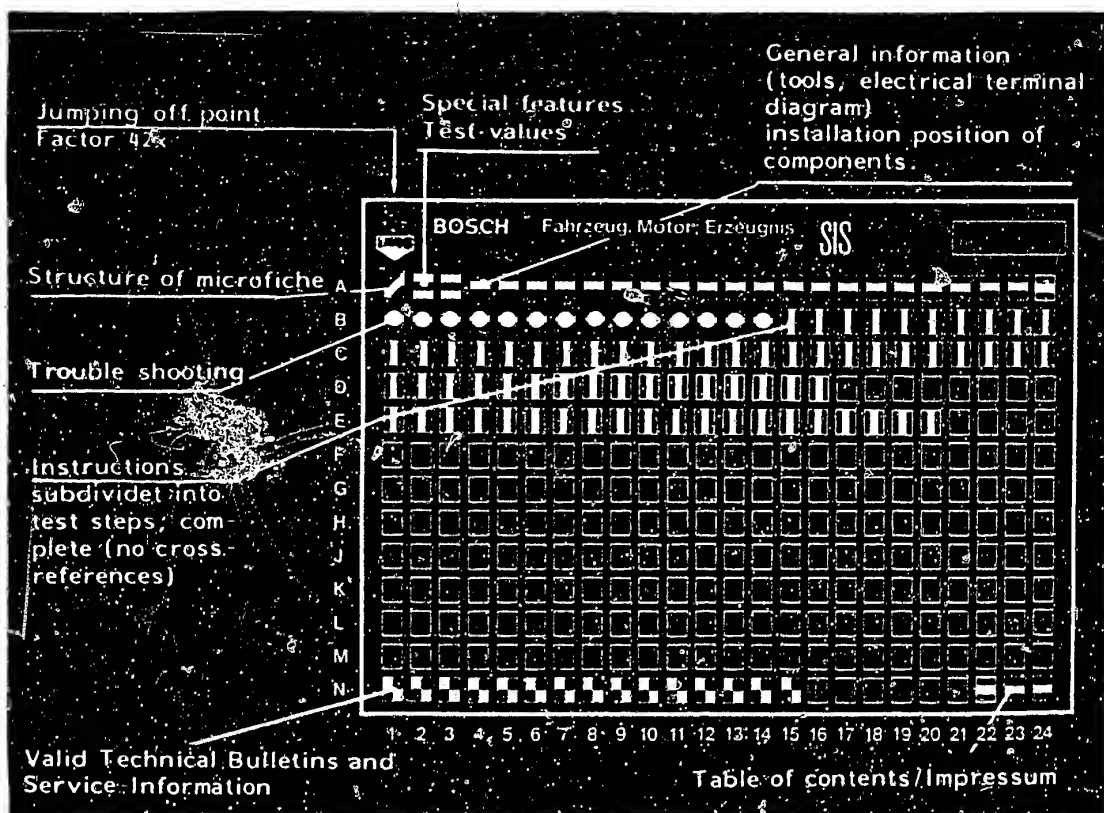


Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

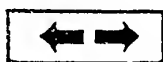
E16	Product/component/test step
	Vehicle/engine

↑ Coordinate

3. Limits of section



Beginning



Mid-section



End



One-page section

4. References to relevant test steps in test specifications; coordinate e.g. C6

C6

A1	Trouble-shooting program	↓
-----------	--------------------------	---

1. Special features

Peugeot 505 Turbo, after 3.84, equipped with:

ignition trigger box	0 227 100 111	(with current limitation)
ignition coil	0 221 122 317	
control unit	0 227 400 023	
knock sensor	0 261 231 001	

2. Test specifications

Ignition coil, primary	0.7...1.2 Ω	B17
Ignition coil, secondary	6.9...11.9 k Ω	

Initial ignition-timing "adjustment" at 9000...1100 min ⁻¹	10° ABDC	C11
---	----------	------------

Voltage supply	≥ 10.5 V	C13
Electronic ignition control unit		

Knock sensor	270...330 k Ω	C19 C21
Knock sensor tightening torque	11...15 Nm	

Rotational angle sensor Term. 21 and Term. 23	3.2...4.8 k Ω	C23
--	----------------------	------------

Rotational angle sensor (at rest) Term. 22 and Term. 23	500...810 Ω	
---	--------------------	--

Voltage supply	12...14 V	D13
Ignition trigger box		

Voltage supply	≥ 10 V	
Ignition coil		

Primary voltage at engine idle	295...365 V	D15
-----------------------------------	-------------	------------



Test specifications (continued)

Voltage supply
Magnetic pulse generator with
ignition on $\geq 10 \text{ V}$

E11

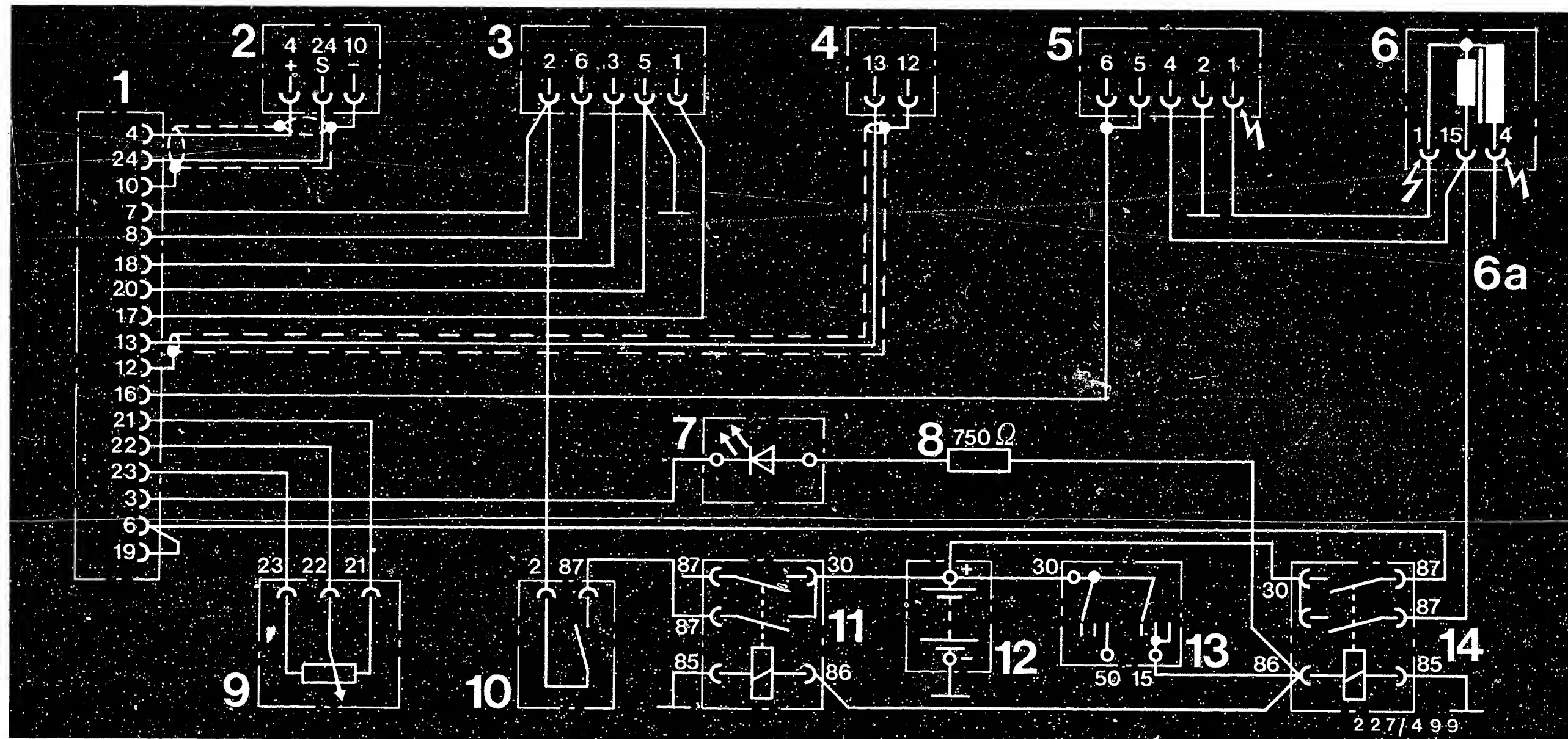
For setting values for ignition, idle speed, exhaust gas, valve clearance etc., see "Auto data" test specifications.

A3

Test specifications

Peugeot






- 1 = Electronic ignition control unit
- 2 = Ignition distributor
- 3 = LU-Jetronic control unit
- 4 = Knock sensor
- 5 = Ignition trigger box
- 6 = Ignition coil

- 6a = To the ignition distributor
- 7 = Indicator light
- 8 = Resistor
- 9 = Rotational angle sensor
- 10 = Idle switch
- 11 = Auxiliary relay

- 12 = Battery
- 13 = Ignition-starting switch
- 14 = Supply relay

 = Dangerous voltages
(400 V - 25 kV)

2. Electrical connection diagram

A4

Electrical connection diagram

Peugeot



A5

Electrical connection diagram

Peugeot





1 = Ignition coil
2 = Ignition trigger box

3 = Cooling plate

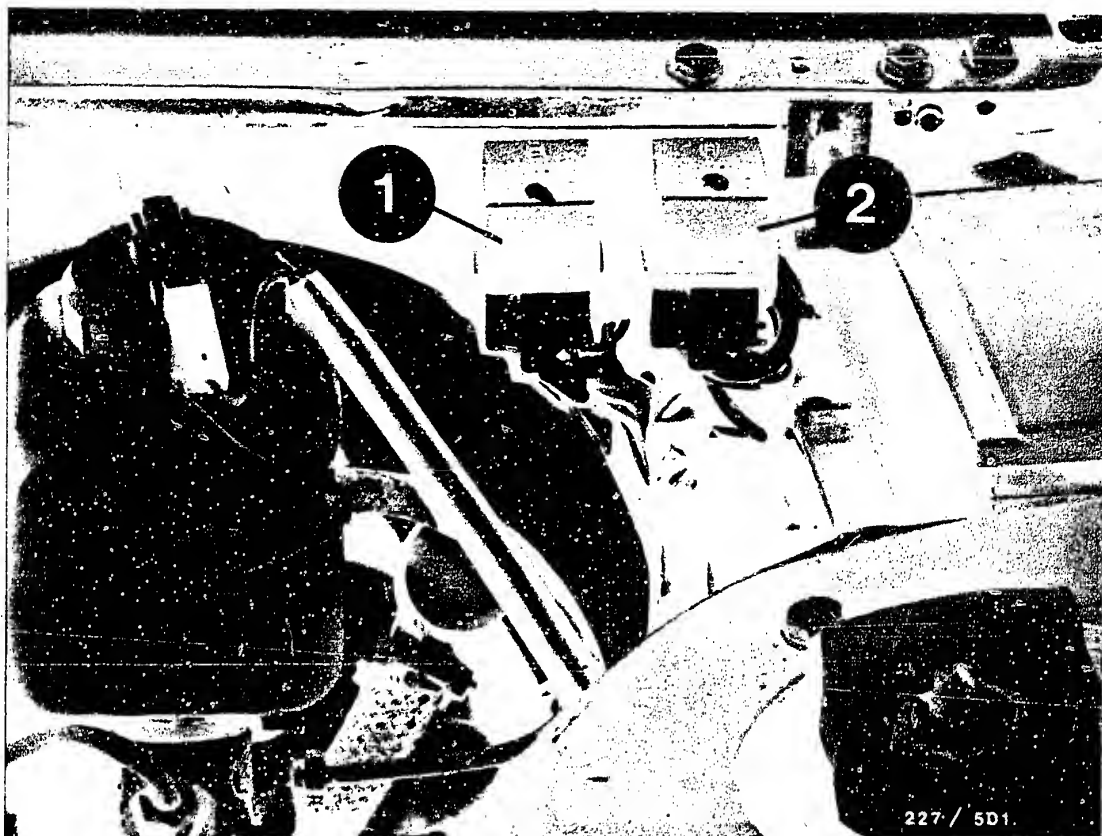
3. Installation position of the components

The ignition trigger box and the ignition coil are mounted on a single cooling plate and located in the engine compartment.

A6

Installation position of the components
Peugeot



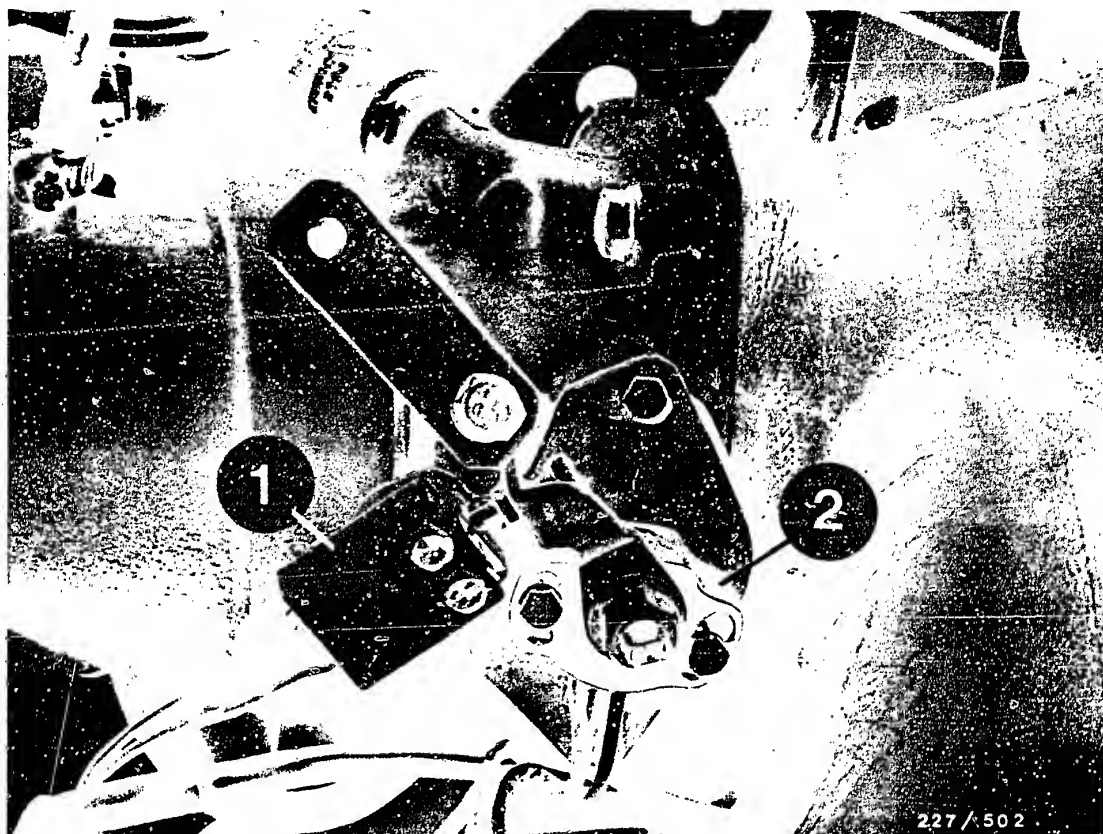


- 1 = Supply relay for ignition
2 = Auxiliary relay

A7

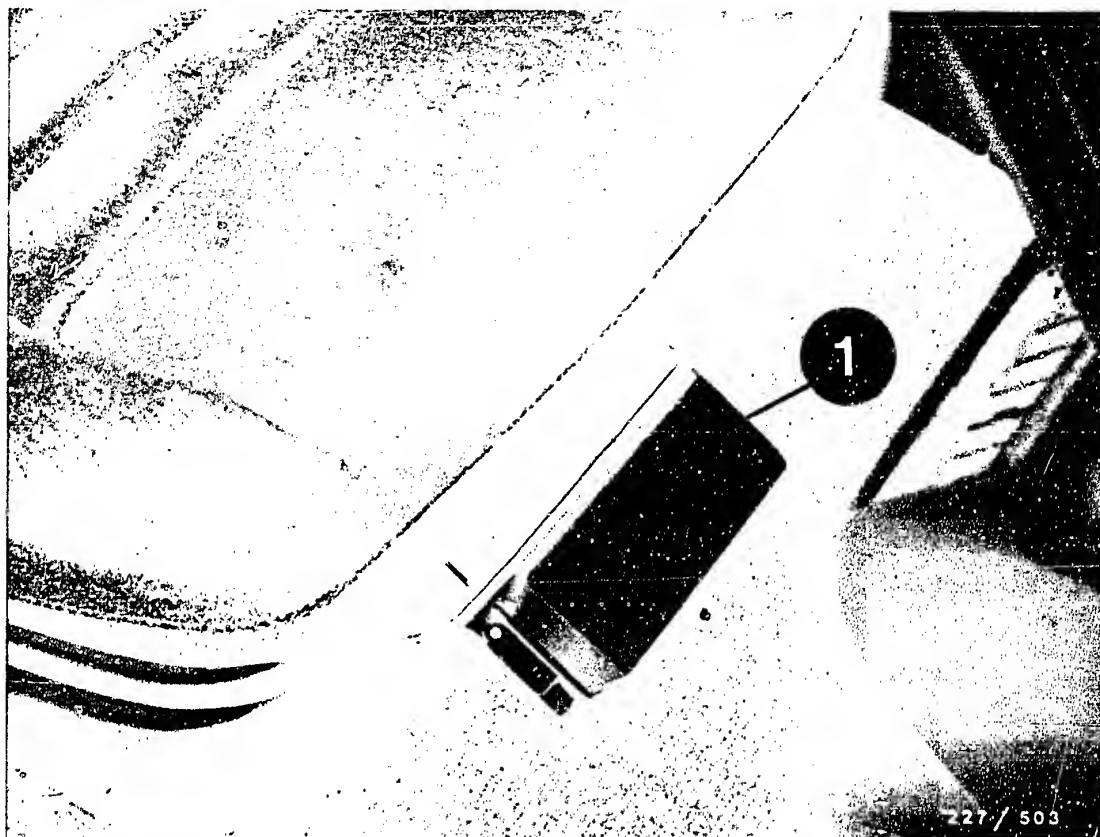
Installation position of the components
Peugeot





- 1 = Idle switch
2 = Rotational angle sensor





1 = Electronic ignition control unit

The electronic ignition control unit is located under the right front passenger's seat.

A9

Installation position of the components
Peugeot



The LU-Jetronic control unit is located above the glove compartment.

Instructions for removal:

Open the glove compartment.

Take off the covering caps in the glove compartment. See figure at top, item 1.

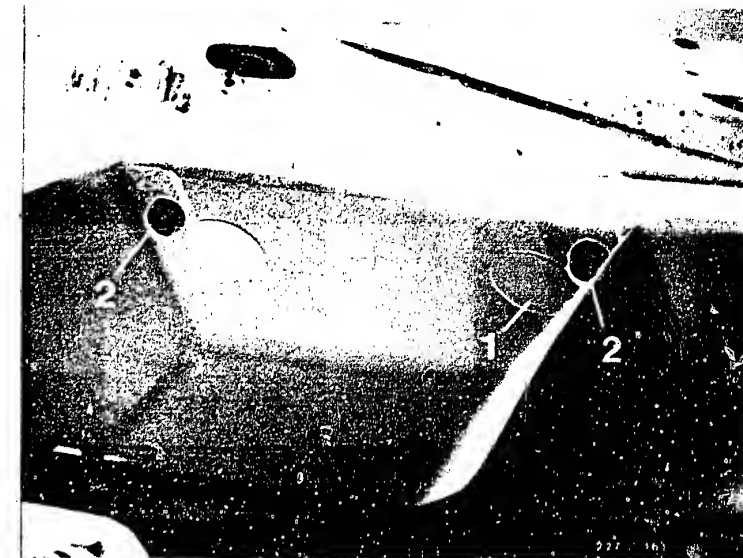
Slide the plastic seal strip along the slot and take it out. See figure at top, item 2.

Remove both bearing pins from the glove compartment, take off the glove compartment.

Take out the glove compartment light.

Unscrew the fastening screws for the control unit.

See arrows, figure at bottom.



A10

Installation position of the components

Peugeot



A11

Installation position of the components

Peugeot



The indicator light, including the protective resistor, is located in the dashboard.
See arrow, figure at top.

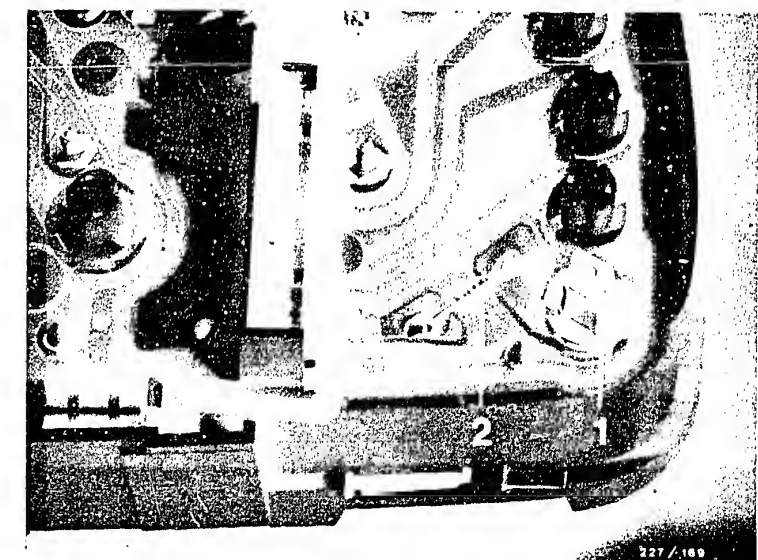
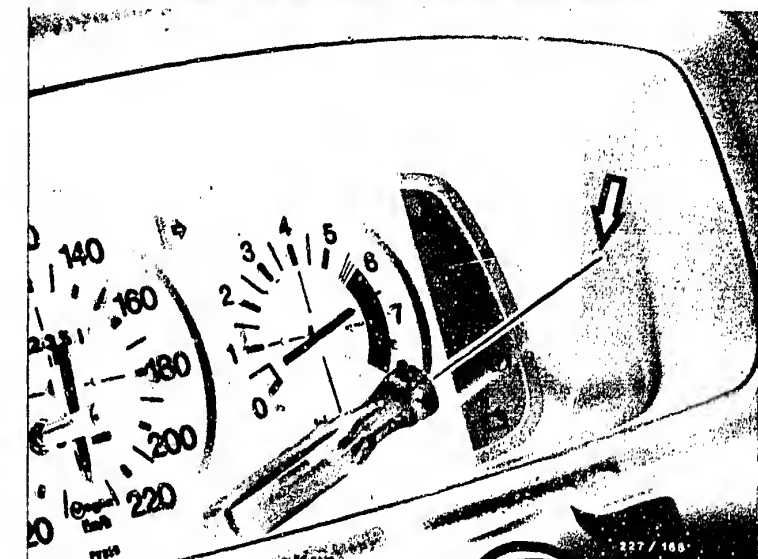
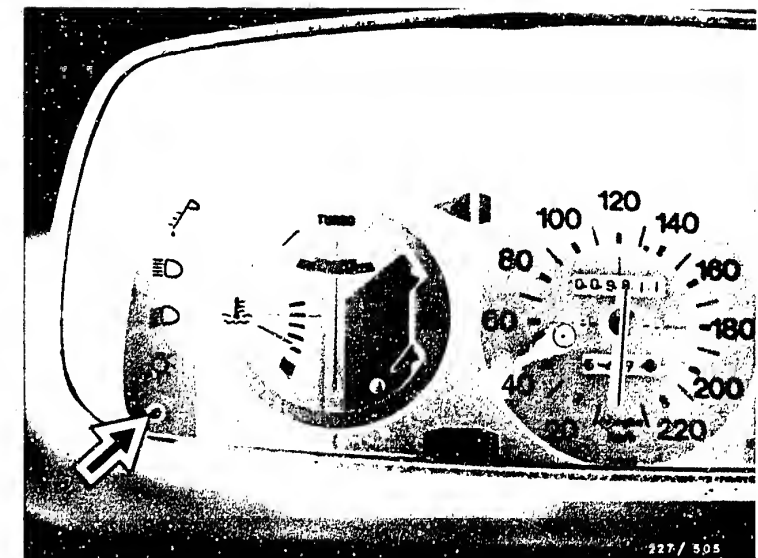
Instructions for removal:

Take out the steering wheel (wheels straight ahead).

Insert a thin screwdriver into the two holes in the dashboard, one after the other.
See figure middle, arrow.

The dashboard is disengaged by pressing lightly on the screwdriver.

Pull the dashboard out of the opening (the tachometer shaft has a catch connection).



Dashboard, taken out, viewed from behind.

1 = Indicator light

2 = Resistor, 750 Ω

A12

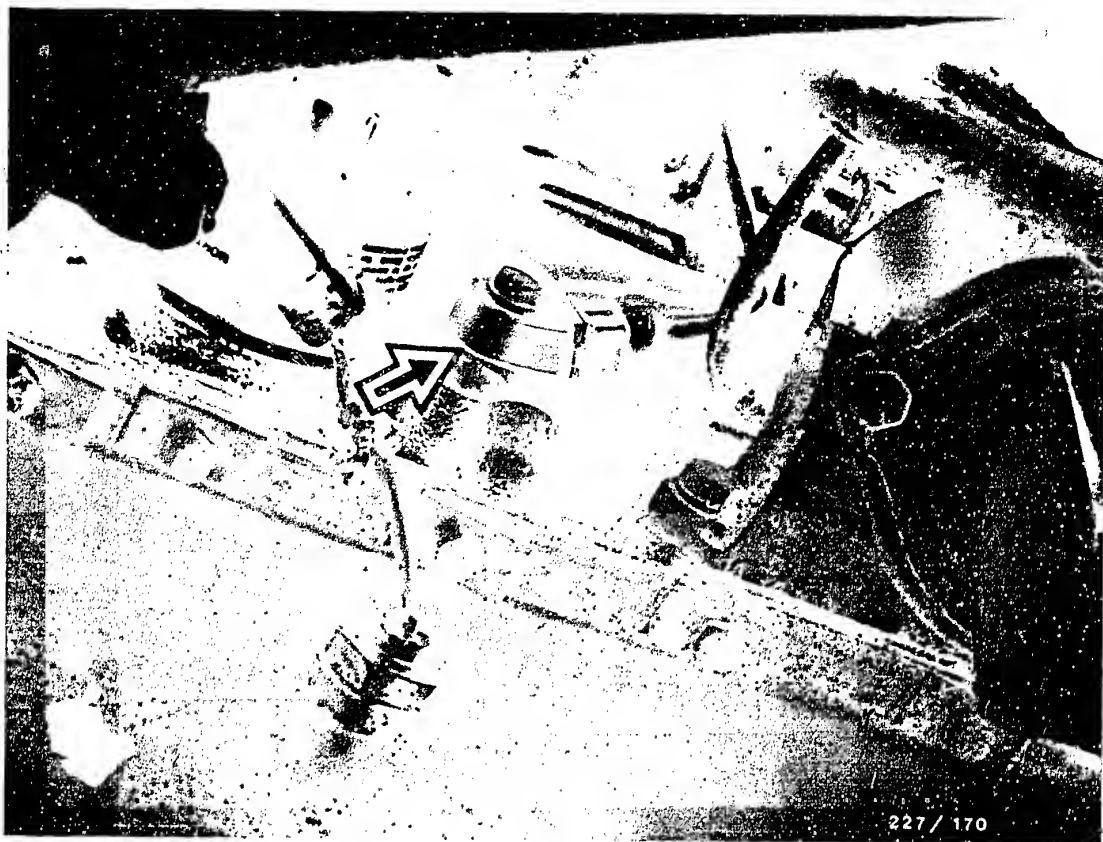
Installation position of the components
Peugeot



A13

Installation position of the components
Peugeot





1 = Knock sensor

The knock sensor is located on the engine block (next to the oil filter) on the left looking in the direction of forward vehicle travel.

Instructions:

Watch the installation position of the knock sensor (connection horizontal). See figure.

Mount the fastening screw of the knock sensor without a washer, spring washer, lock washer, or the like.

Tightening torque 11 ... 15 Nm

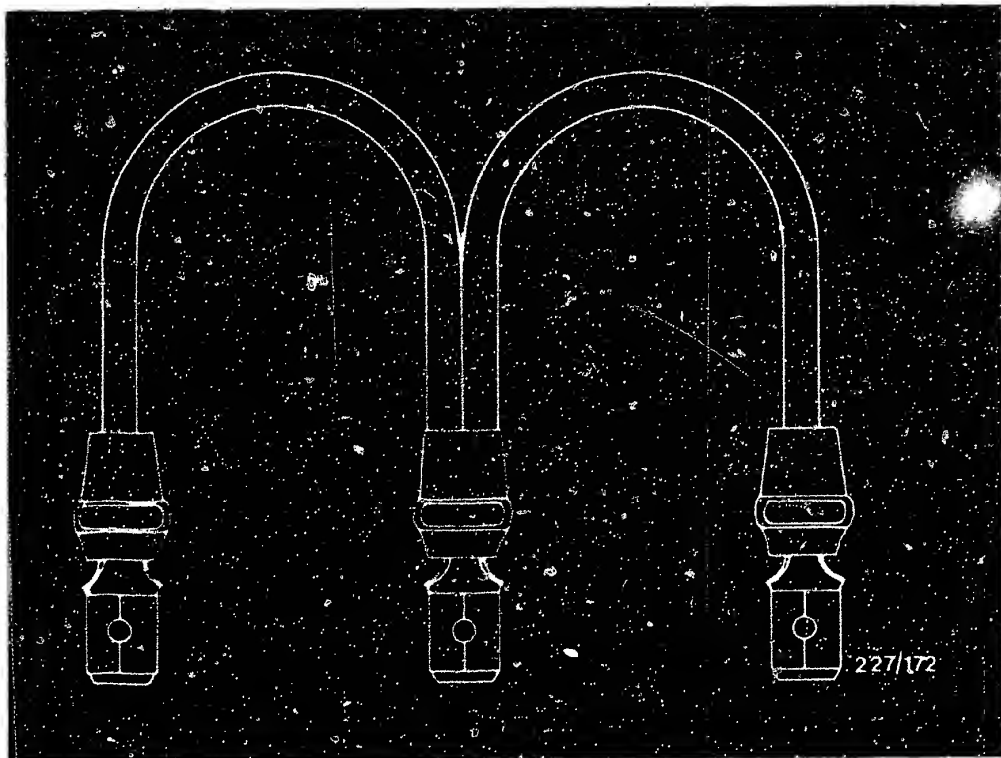
Use only safety-locking varnish to secure the fastening screw.



4. Test equipment and tools required

Motortester, e.g.	MOT 201	0 684 000 201
Spark gap, e.g., ignition coil capacitor tester	EFAW 106 A	0 691 100 001
or single spark gap	EF 1177/7	1 684 531 000
Sleeve-type suppressor, 5 k Ω		0 356 500 001
Voltmeter	MOT 201	0 684 000 201
with $R_i \geq 100 \text{ k}\Omega$	MOT 300	0 684 000 300
and resolution 10 mV	ETE 014.00	0 684 101 400
or digital multimeter		commercially available
with $R_i \geq 100 \text{ k}\Omega$		
and resolution 10 mV		
Ohmmeter	ETE 014.00	0 684 101 400
or, for example	Pontavi WH 2	commercially available
Heat conduction paste		5 942 860 003
Screw-locking varnish	30 g	5 703 245 003
Torque wrench		commercially available
range 5 ... 60 Nm		
Test leads		KDZS 0004
(for proper connection of testers to connection plugs)		and KDZS 0005
Test prods		commercially available
(for proper connection of testers to connection plugs)		





1 = Auxiliary lead, for user fabrication

The auxiliary lead is needed to jump the supply relay (ignition).

Parts required:

approx. 150 mm cable
3 blade terminals

2.5 mm²
8 784 480 011



5. Accident hazard on electronic ignition systems

The increased demands imposed on ignition systems by modern engines, and the desire for freedom from maintenance led a good while ago to series production use of electronic ignition systems. As a rule, the ignition outputs from the electronic systems (of almost all manufacturers) are higher than those from conventional systems, and further increases in output can be expected. With that, electronic ignition systems are coming into an output range which can be life-endangering if parts or terminals that carry electricity are touched (on either the primary or the secondary side).

In this connection, we point out that when working or testing on the ignition system, the VDE regulations, particularly VDE 0104/7.67, and the government regulations that apply are to be strictly followed.

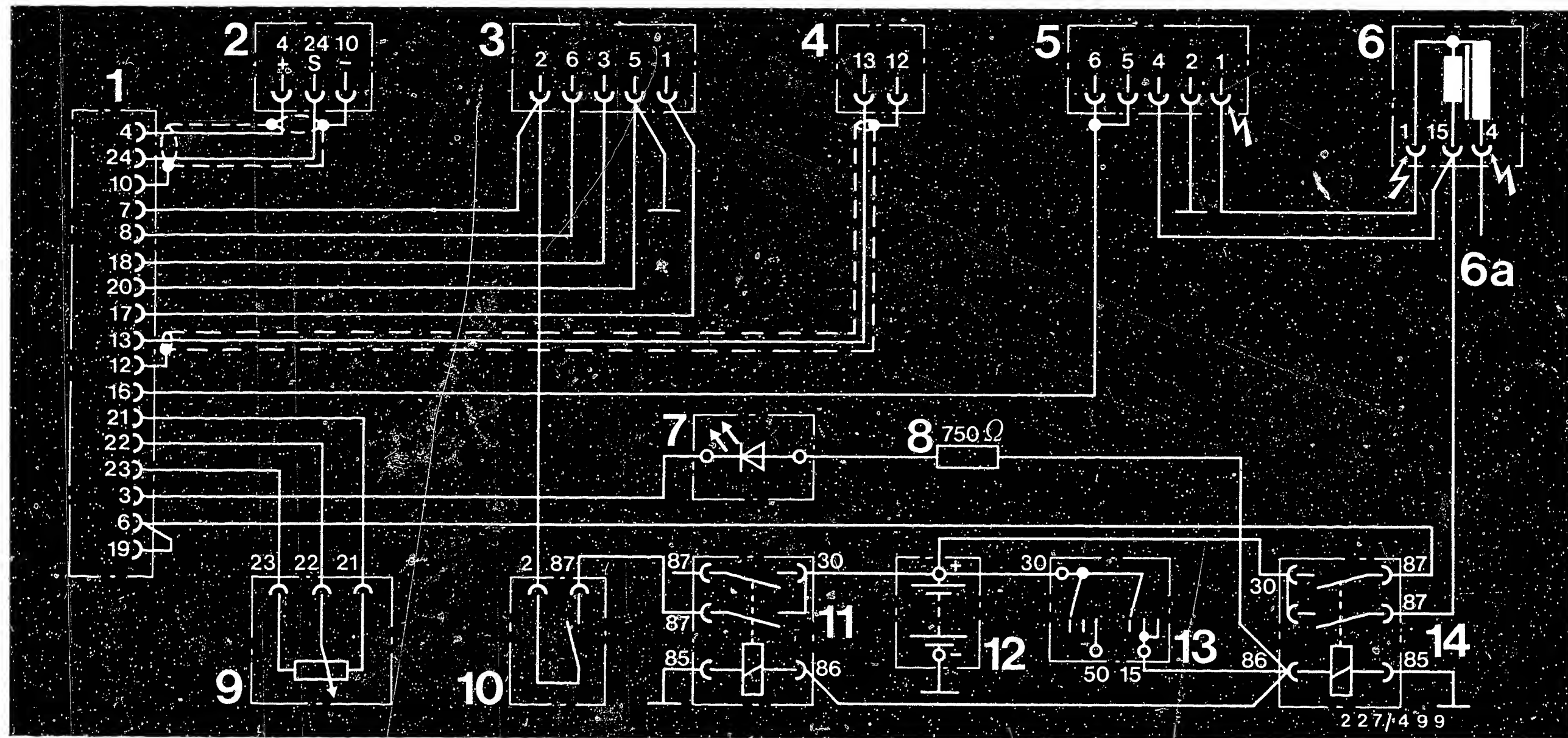
In principle, when working on the ignition system, shut the ignition off (switch off the ignition and/or the source of electricity). These jobs include:

- connecting the engine testing instruments (timing light, dwell angle - engine speed tester, ignition oscilloscope, etc.).
- Taking out and replacing parts of the ignition system (spark plug, ignition coil, ignition distributor, ignition cable, etc.).

If it becomes necessary to turn on the ignition (to switch on the ignition and/or the source of electricity) during the testing of the ignition system and/or adjustments on the engine (e.g., LU-Jetronic), the dangerous voltages mentioned above are present on the entire system.

The accident hazard therefore is present not only on the individual units of the ignition system (such as, for example, the ignition distributor, ignition coil, trigger box, ignition wiring harness), but also on the engine wiring harness (as, for example, the tachometer connection, the diagnosis plug), on plug connections, and on the testing instruments.





1 = Electronic ignition control unit
 2 = Ignition distributor
 3 = LU-Jetronic control unit
 4 = Knock sensor
 5 = Ignition trigger box
 6 = Ignition coil

6a = To the ignition distributor
 7 = Indicator light
 8 = Resistor
 9 = Rotational angle sensor
 10 = Idle switch
 11 = Auxiliary relay

12 = Battery
 13 = Ignition-starting switch
 14 = Supply relay

⚡ = Dangerous voltages
 (400 V - 25 kV)

Electrical connection diagram

Using the example of the connection diagram for an electronic ignition system, the dangerous points have been identified with high voltage arrows.

A18

Accident hazard
Peugeot



A19

Accident hazard
Peugeot



6. Incorrect display of rotational speed, dwell angle,
and ignition timing

In ignition systems with ignition trigger box
0 227 100 111 (TZ-I) with current limitation, an in-
correct display of rotational speed, dwell angle, and
ignition point can occur on the test instruments.

For more detailed instructions, see Coordinates N10 -
N14.



7. Important vehicle instructions

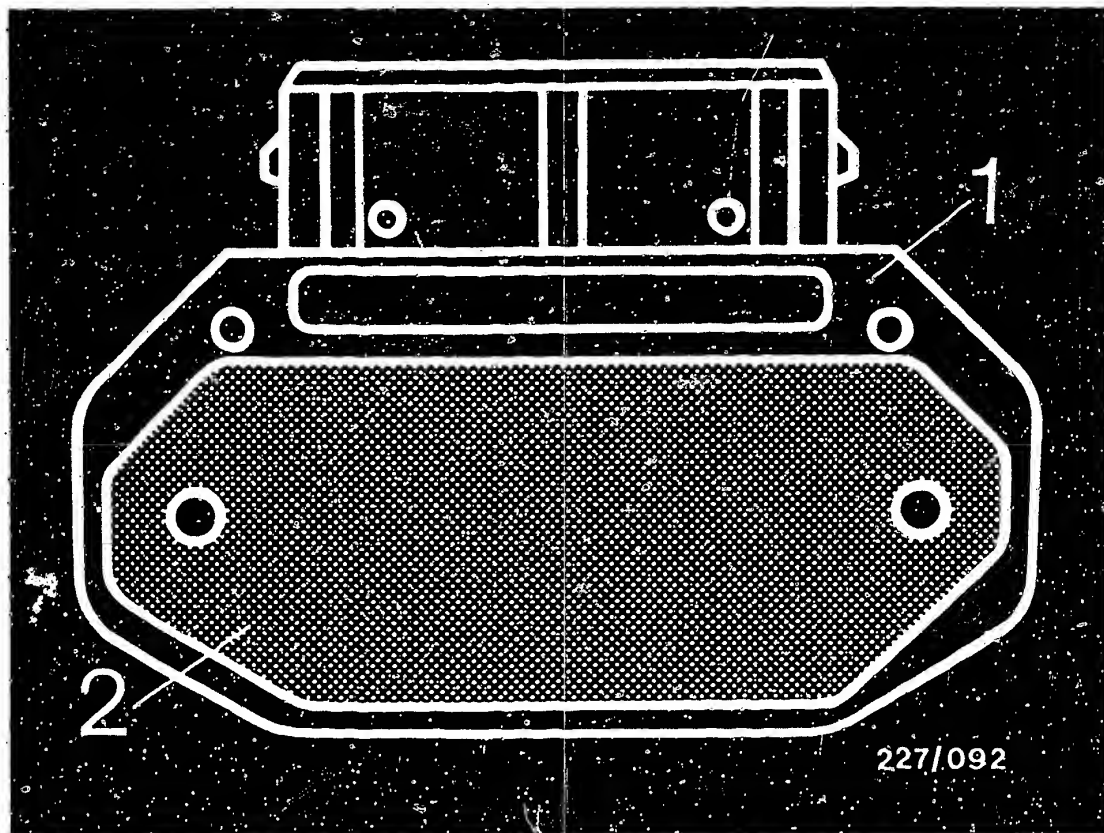
- Take measurements of resistance only with the ignition switched off and/or the battery disconnected (tester defective).
- When checking compression, disconnect the trigger box plug or ground firmly ignition coil Term. 4 using the auxiliary cable (dangerous high voltage, damage to insulation on the ignition coil, ignition distributor, ignition wiring harness).

Note:

The auxiliary cable must have interference suppression of at least 2 k Ω , e.g., sleeve-type suppressor (5 k Ω) 0 356 500 001.

- The prescribed ignition coil (see Part No.) must not be replaced with a different ignition coil.
- No interference suppression capacitor may be connected to ignition coil Term. 1.
- It is not permissible to connect ignition coil Term.1 to ground to protect against theft. (With the "ignition on", the ignition coil is destroyed).
- It is not permissible to connect battery + or any test light to ignition coil Term. 1. (The trigger box gets destroyed).
- There must not be any voltage flash-over from ignition coil Term. 4 to the ignition coil Term. 1 and Term. 15. The magnetic pulse generator and the ignition trigger box can be destroyed.





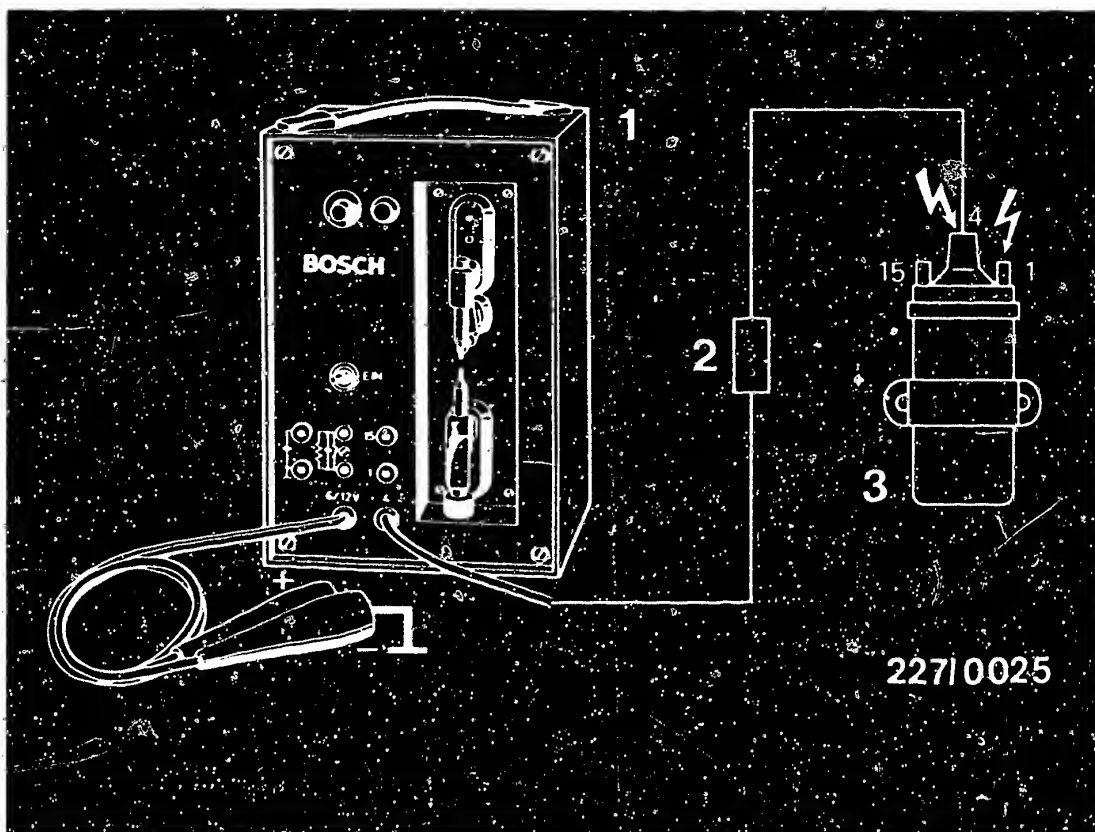
1 = Ignition trigger box 2 = Base plate

- Before the ignition trigger box is mounted, the base plate must be coated with heat conduction paste.


Apply the heat conduction paste only using a suitable tool (screwdriver, match, or the like).

Do not apply any heat conduction paste to varnished parts.





1 = Spark gap
2 = Sleeve-type suppressor 5 k Ω
3 = Ignition coil

 = Dangerous voltages (400 V - 25 kV)

- When using a spark gap, in order to avoid destruction of the ignition trigger box, a suppressor resistor of min. 2 k Ω must be connected between the spark gap and ignition coil Term. 4. For example, sleeve-type suppressor (5 k Ω) 0 356 500 001.



- In order to avoid destruction of the ignition trigger box, the secondary side of the ignition system must have at least 2 k Ω interference suppression, for which the original distributor rotor with 1 k Ω suppressor resistor must be put in. (Do not use any 5 k Ω distributor rotor for radio and interference suppression.)
- No outside voltage (e.g., ohmmeter) may be connected to the magnetic pulse generator (Hall sensor). Be very careful when switching over range of measurement.
- The leads from the magnetic pulse generator to the electronic ignition control unit must be shielded (destroys operation of the control unit).
- The retaining springs on the ignition distributor cap must not fall into the sensor system when the engine is being turned over with the dust protector cover taken off.
- Flash-over or flash-through on the ignition distributor cap (poor insulation) can destroy the magnetic pulse generator and the trigger box.
- Do not disconnect the battery with the engine running.
- Starting assistance using more than 16 volts or a quick-battery charger is not permissible.
- The knock sensor lead must be shielded and must be laid separately from the high voltage leads.
- Mount the fastening screw for the knock sensor without washers, spring washers, lock washers, or the like. Use locking varnish only to secure the fastening screw.
- If the poles of the battery are incorrectly connected, the magnetic pulse generator, the ignition trigger box, the ignition coil, and the electronic ignition control unit are destroyed.



8. Trouble-shooting

8.1 How to use the self-diagnosis and self-diagnosis test chart

The electronic ignition control unit installed in this vehicle has a self-diagnosis system (only knock control).

For that reason, in every test, you must start with the self-diagnosis.

Activation of the self-diagnosis is described at coordinates B5.

The self-diagnosis test chart starting at coordinates B7 includes display of the defect (consisting of the indicator light built into the vehicle), the causes of the defect, testing instructions, and indication of coordinates for a targeted trouble-shooting.

If no defect is indicated in the self-diagnosis, and the customer complaint has still not been eliminated, the trouble-shooting must be continued using the trouble-shooting chart and/or the trouble-shooting plan beginning with coordinates B9.

8.2 How to use the trouble-shooting chart

The trouble-shooting chart starting at coordinates B9 includes customer complaint (defect symptoms), causes of defects, test instructions, and indication of coordinates.

The possible cause for defects that correspond to the customer complaint (defect symptom) is to be selected in the trouble-shooting chart.

If the cause of the defect is not clear, the testing must be started using the detailed and self-contained trouble-shooting plan starting at coordinates B15.

If the cause of the defect has been clearly identified in accordance with the trouble-shooting chart, a targeted trouble-shooting becomes possible via the coordinates indicated, without the necessity of carrying through the entire trouble-shooting plan for every defect.

If there is no indication of coordinates, the trouble-shooting must be carried out as indicated in the column "test instructions".

B1

Trouble-shooting

Peugeot

**B2**

Trouble-shooting

Peugeot



8.3 How to handle the trouble-shooting program

The trouble-shooting program starting from coordinates B15 is organized into 3 columns of boxes.

The column at the left contains test instructions and test specifications.

The column in the middle contains repair instructions.

The column at the right contains the figures/connection diagrams, and the explanations of the items in the pictures which go along with the text.

If the questions asked in the column at the left can clearly be answered "yes", proceed to the next test down the column.

If the answer is no, you must shift to the middle column and carry through the tests indicated there.

8.4 Prerequisites for testing

Battery fully charged, fuel system in order, engine mechanically in order (e.g., compression, valve clearance, etc.), ambient temperature and/or temperature of the ignition system 0° to 100°C (The temperature strongly affects the measurements).

8.5 Activation of the self-diagnosis

Prerequisite for testing:

Engine is turning with min. 4000 min⁻¹. The indicator light must turn on with "ignition on".

General information:

Control unit 0 227 400 023 has a self-diagnosis system in the form of a flashing code. Only 1 defect at a time is indicated in this self-diagnosis. In order to ask about further defects, the defect identified first must be eliminated. A total of 6 different defects (only knock control) can be inquired about in the form of a flashing code.

Activation:

Turn on the ignition. The indicator light must light up. If the indicator light does not turn on, do the test step, coordinates C1/C2.

After that continue activation per coordinates B5/B6.

Start the engine and run it at idle for at least 10 seconds at at least 4000 min⁻¹.

Depending on the defect, the indicator light now flashes 2 to 6 times.

Using the self-diagnosis test chart (coordinates B7/B8), the flashing code can be evaluated and/or the defect can be eliminated.

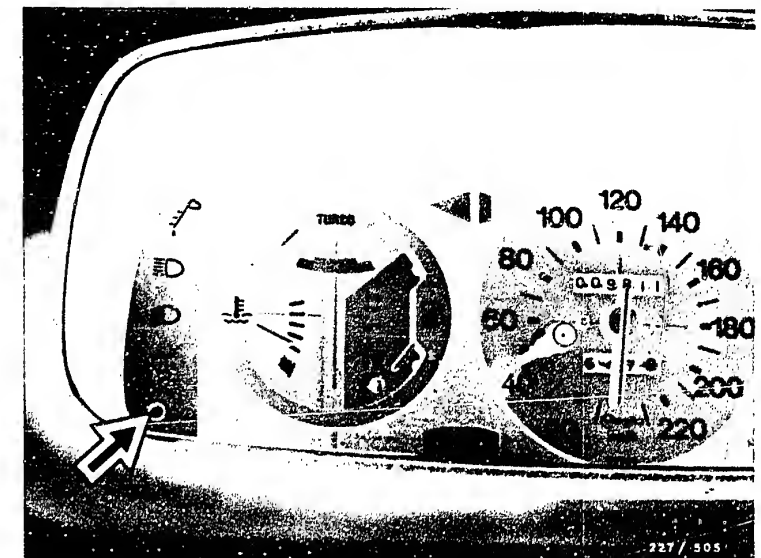
Instructions:

Each diagnosis run is followed by a pause of approx. 3 seconds (indicator light remains off).

The diagnosis runs, including the pauses, repeat until the ignition is turned off.

That erases the defect in the control unit memory.

Activation of the self-diagnosis system, and subsequent elimination of errors must be repeated until the indicator light no longer flashes (the knock control is then in order).



Indicator light (arrow)

B5

Self-diagnosis

Peugeot



B6

Self-diagnosis

Peugeot

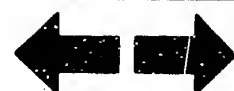


Self-diagnosis test chart

Indication of defect	Cause of defect	Test instructions	Coordinates
Indicator light does not flash	Knock control O.K.	-----	-----
Indicator light flashes twice	Voltage supply from ignition control unit < 10.5 V	Check and eliminate voltage drop	C 13
Indicator light blinks 3 times	Electronic ignition control unit not in order	Take out and replace electronic ignition control unit	-----
Indicator light flashes 4 times	Knock control not in order	Check knock sensor (knock sensor attachment, for break in lead or short-circuit)	C 17
Indicator light flashes 5 times	Rotational angle sensor not in order (input voltage too great)	Check angle sensor (resistance, break in lead, lead connection to battery +)	C 23
Indicator light flashes 6 times	Angle sensor not in order (input voltage too small)	Check angle sensor (ground, voltage supply, adjust angle sensor)	D 3
	or no load signal from LU-Jetronic	Check load signal (break in lead, ground)	

B7

Self-diagnosis
Peugeot



B8

Self-diagnosis
Peugeot



8.6 Trouble-shooting chart

Customer complaint (defect symptom)

1. Starting motor turns, engine does not start											
2. Rough idle											
3. No throttle take-up (partial load problems)											
4. Poor engine performance											
5. Engine missing											
6. Poor mileage											
7. Engine pings / knocks											
8. Misfiring											
9. Engine becomes too hot											
									<u>Cause of defect</u>	<u>Test instructions</u>	<u>Coordinates</u>
●	●	●	●	●	●	●	●	●	Not clear	Carry out detailed trouble-shooting	B 15
●	●	●	●	●	●		●		Spark plugs defective	Evaluation using ignition oscillogram, and/or visual inspection of spark plug after removal	-----
		●	●	●	●				Suppression resistors not in order	Evaluation using ignition oscillogram, and/or measurement of resistance	-----
●	●	●	●	●					Shunt on secondary side	Evaluation of ignition coil, ignition distributor, ignition wiring harness, and spark plug by means of ignition oscillogram and/or visual inspection	-----
●	●	●	●	●					Break on the secondary side	Evaluation of ignition coil, ignition distributor, ignition wiring harness, and spark plug using ignition oscillogram or test for continuity using ohmmeter	-----
●									Break on the primary side	-----	E 5
●	●	●	●	●					Ignition coil not in order	-----	B 17

B9

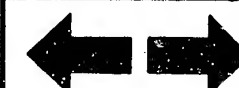
Trouble-shooting chart

Peugeot


B10

Trouble-shooting chart

Peugeot



Trouble-shooting chart (continued)

Customer complaint (defect symptom)

1. Starting motor turns, engine does not start
2. Rough idle
3. No throttle take-up (part load problems)
4. Poor engine performance
5. Engine missing
6. Poor mileage
7. Engine pings / knocks
8. Misfiring
9. Engine becomes too hot

									<u>Cause of defect</u>	<u>Test instructions</u>	<u>Coordinates</u>
●							●		Firing sequence not in order	Firing sequence 1 - 3 - 4 - 2	-----
		●	●		●	●			Idle switch not in order	-----	C 5
●	●	●	●	●	●	●	●	●	Initial ignition-timing adjustment not in order	In order to avoid incorrect adjustment, be absolutely certain to run test according to information at coordinates	C 5...C 12
			●		●			●	Voltage supply from the electronic ignition control unit not in order	-----	C 13
			●		●			●	Knock sensor not in order	-----	C 17
			●		●			●	Rotational angle sensor not in order (input voltage too great)	-----	C 23
			●		●			●	Rotational angle sensor not in order (input voltage too small)	-----	D 3

B 11

Trouble-shooting chart

Peugeot



B 12

Trouble-shooting chart

Peugeot



Trouble-shooting chart (continued)

Customer complaint (defect symptom)

1. Starting motor turns, engine does not start

2. Rough idle

3. No throttle take-up (part load problems)

4. Poor engine performance

5. Engine missing

6. Poor mileage

7. Engine pings / knocks

8. Misfiring

9. Engine becomes too hot

									<u>Causes of defect</u>	<u>Test instructions</u>	<u>Coordinates</u>
		•	•		•			•	Load signal from the LU-Jetronic not in order	-----	D 9
			•		•	•		•	Full-load signal not in order	-----	D 11
•									Voltage supply from trigger box not in order	-----	E 1
•									Voltage supply from electronic ignition control unit not in order	-----	E 7
•									Magnetic pulse generator not in order	-----	E 9 ... E14
•									Electronic ignition control unit not in order	-----	E 15
			•		•			•	Unusual engine noises	Engine mechanically not in order (bearing damages, valve spring broken, etc.)	-----
			•		•	•		•	Fuel not proper	Fuel with too low an octane rating	-----

B 13

Trouble-shooting chart
Peugeot



B 14

Trouble-shooting chart
Peugeot



8.7 Trouble-shooting plan

Check the primary signal.

If there is no oscilloscope or rotational speed tester available, check whether there is an ignition spark on the spark gap.

Primary signal using oscilloscope

Connect oscilloscope to ignition coil according to operating instructions. Start engine. Oscilloscope must show a primary voltage (no matter what the height).

Primary signal using rotational speed tester

Connect rotational speed tester to ignition coil according to operating instructions. Start engine. The rotational speed tester must show a value (no matter what the height).

Ignition spark using spark gap

Disconnect ignition lead Term. 4 from ignition coil.

Connect spark gap including the sleeve-type suppressor (5 k Ω) to the ignition coil.

Set the spark gap at 5 mm. Start the engine.

There must be sparks at the spark cap.

Is there a primary signal, or is there an ignition spark at the spark gap?

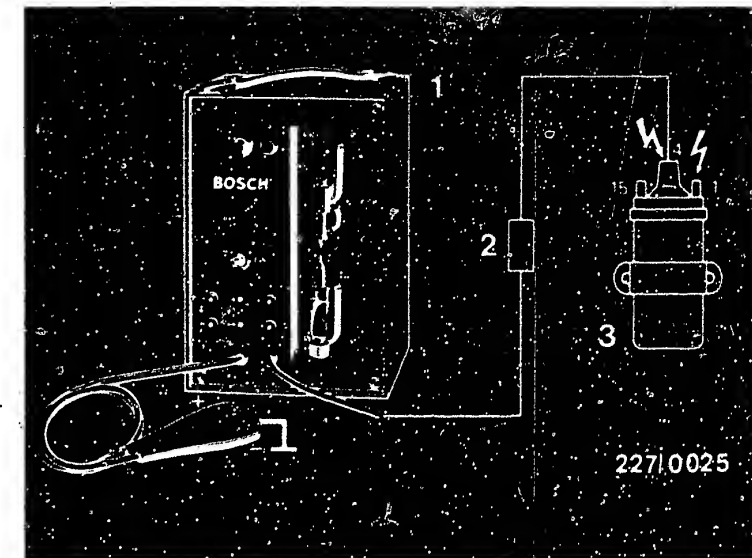
yes

Continued on B17/B18

no

If there is no primary signal, or if there is no ignition spark, continue testing at E 1.

Tests after B17 are not needed.



- 1 = Spark gap
- 2 = Sleeve-type suppressor 5 k Ω
- 3 = Ignition coil

⚡ = Dangerous voltages

B 15

Trouble-shooting plan

Peugeot

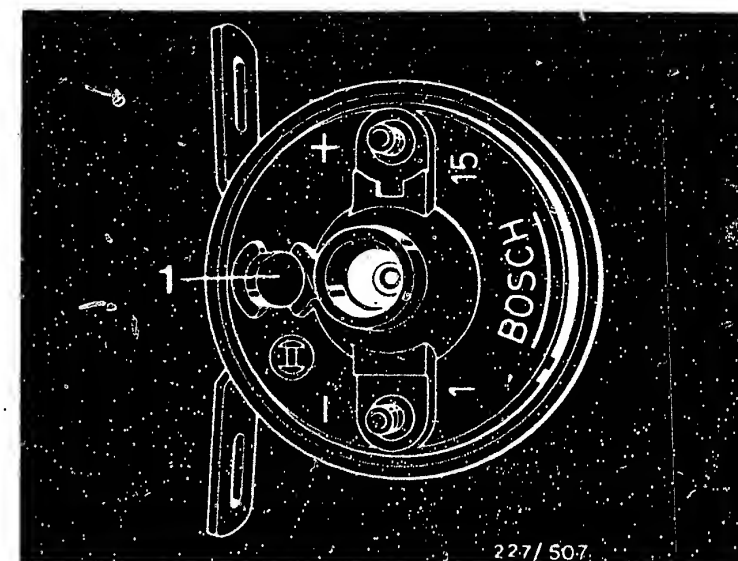


B 16

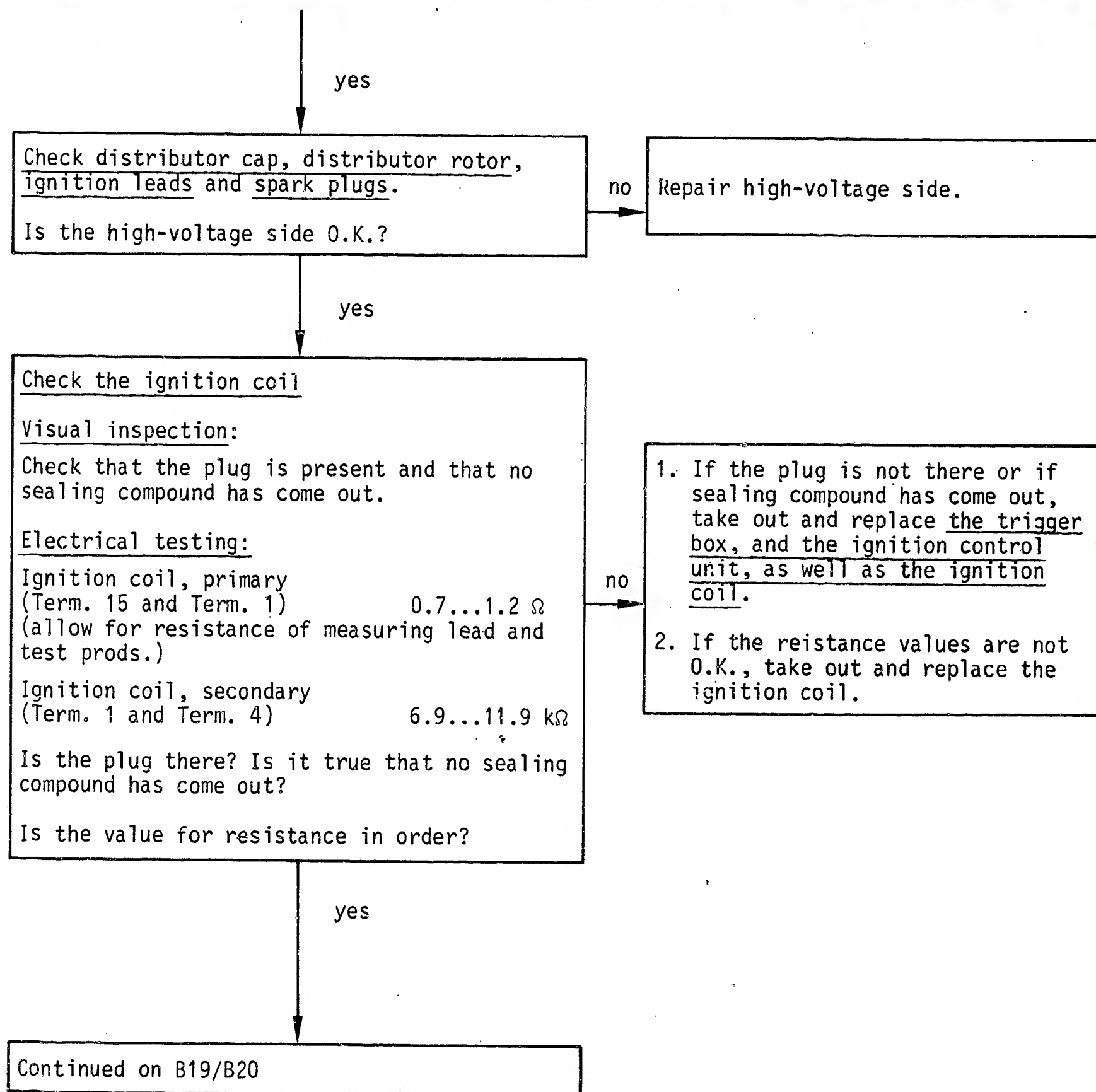
Trouble-shooting plan

Peugeot





1 = Plug



B 17

Trouble-shooting plan

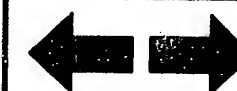
Peugeot

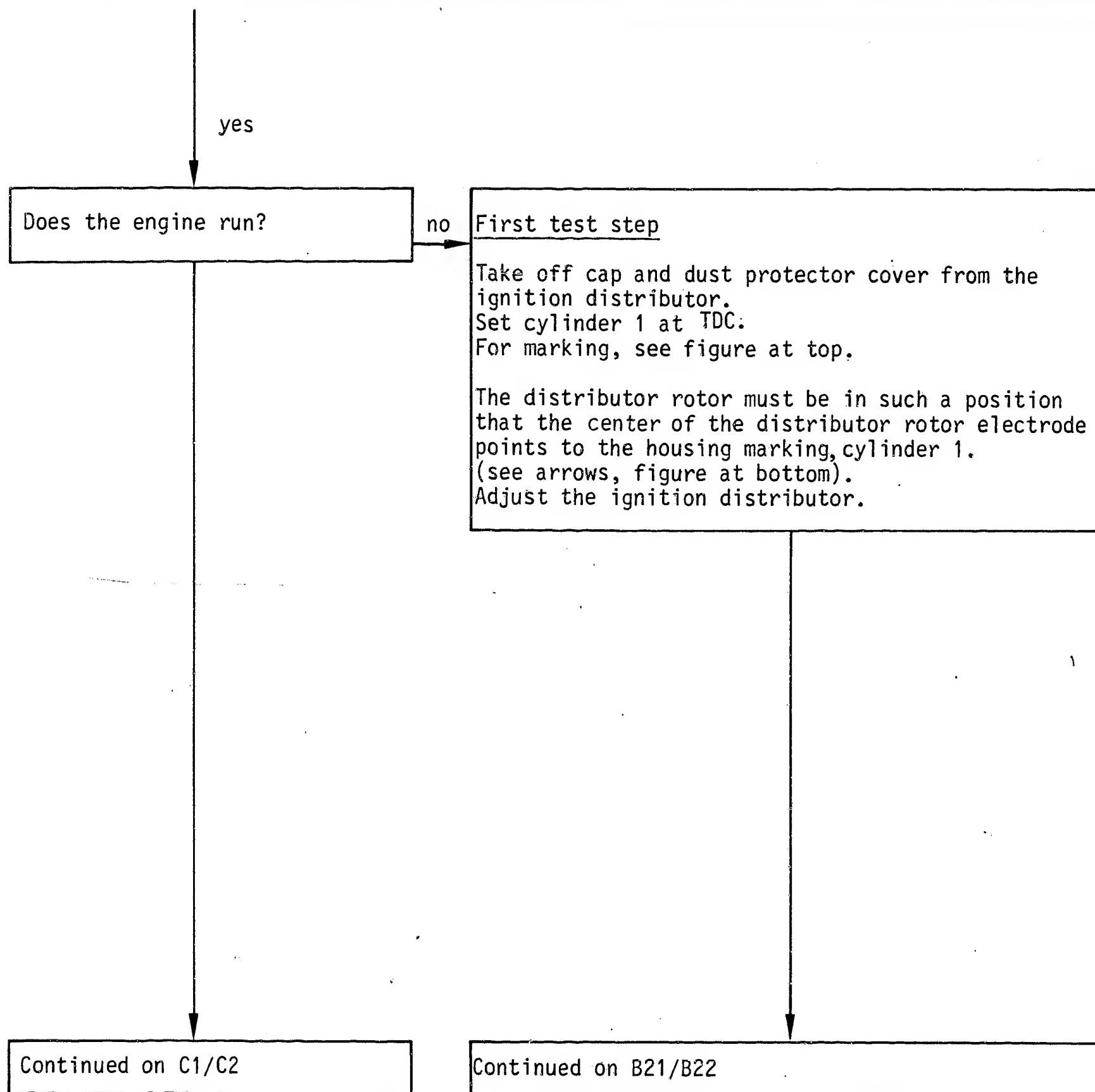


B 18

Trouble-shooting plan

Peugeot





B 19

Trouble-shooting plan
Peugeot



B 20

Trouble-shooting plan
Peugeot



Continued

Second test step

Turn off the ignition.
Remove the LU-Jetronic control unit plug.
See figure at top.
Connect the oscilloscope in the "special" program
switch setting according to operating instructions.

For example, MOT 201:
Red terminal to LU-Jetronic control unit plug
Term. 1 (measuring signal).
Black terminal to vehicle ground.
Start engine.

The oscilloscope must show a rectangular impulse.
See figure at center..

If there is no rectangular pulse, take off the
electronic ignition control unit plug.
See figure at bottom.

Check for a break in the lead from the ignition
control unit Term. 17 to the LU-Jetronic control
unit plug Term. 1.

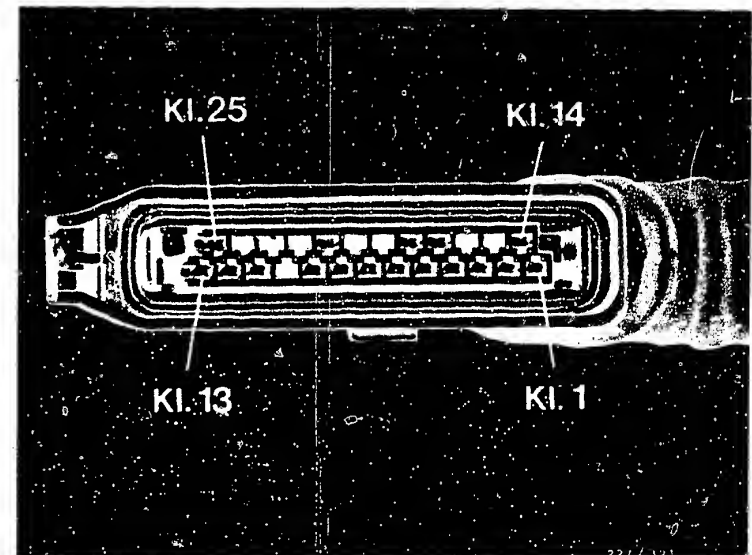
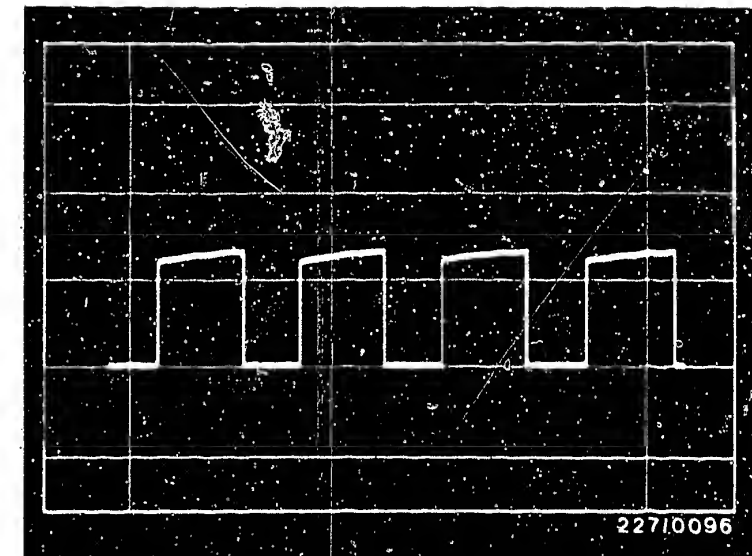
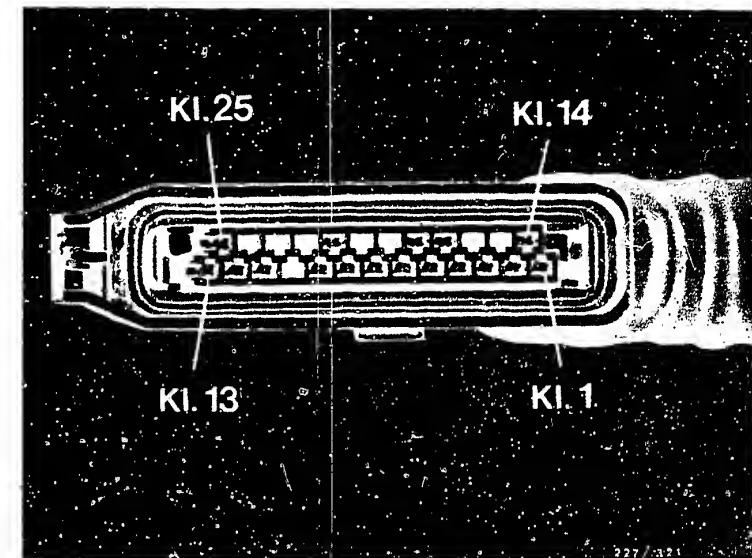
Eliminate the break.

If there was no break found, take out and replace
the electronic ignition control unit.

yes

Continued on C1/C2

Continued on B23/B24



B21

Trouble-shooting plan
Peugeot



B22

Trouble-shooting plan
Peugeot



Continued

Third test step

Disconnect the positive and negative leads from the battery.

Disconnect the trigger box plug.
See figure at top.

Disconnect the supply relay.

See figure at bottom.

Connect the relay plug Term. 30 and the two Term. 87 using an auxiliary lead (jumper).

See figure at bottom.

Turn on the ignition.

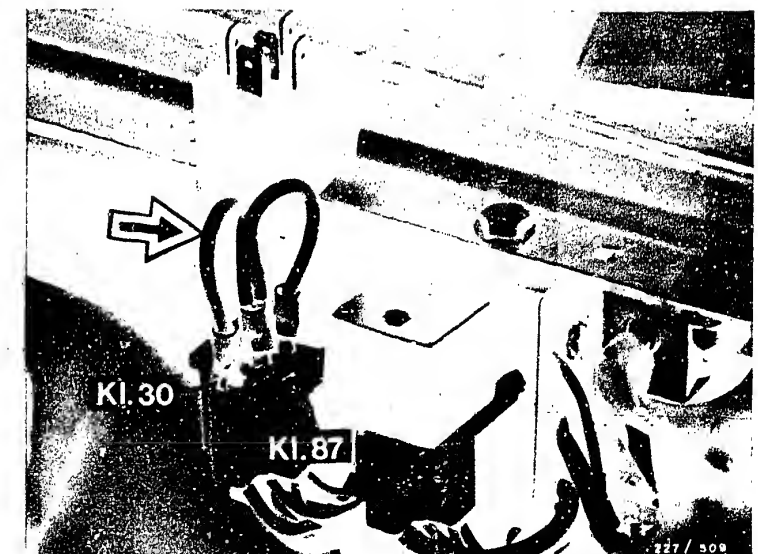
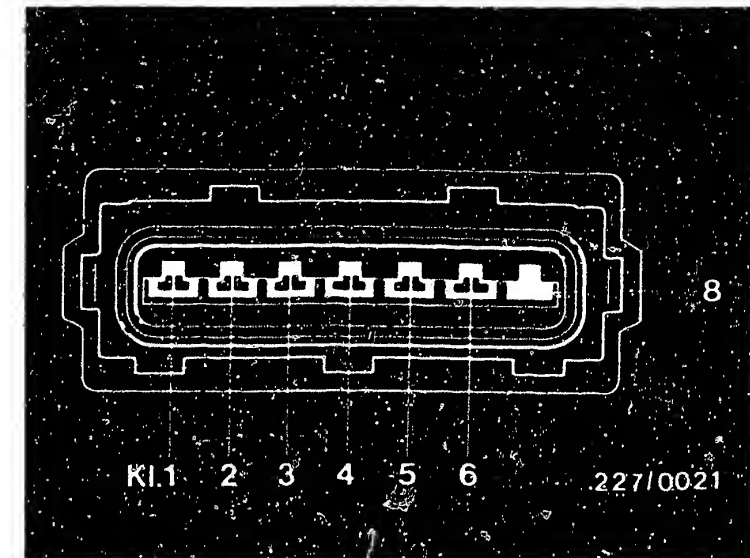
Check the leads from battery terminal + to the trigger box Term. 4 and the leads from battery terminal - to the trigger box plug Term. 2 for contact resistance. Maximum total contact resistance 0.3 Ω (Take into consideration the resistance in the test lead with test prods).
Eliminate contact resistance.

Check leads from battery terminal + to ignition coil Term. 15 and lead from ignition coil Term. 1 to the trigger box Term. 1 for contact resistance. Max. total contact resistance 0.3 Ω (Take into consideration resistance of test lead and test prods).
Eliminate any contact resistance.

If test steps 1, 2, and 3 are O.K., then take out and replace the trigger box.

yes

Continued on C1/C2



B23

Trouble-shooting plan
Peugeot



B24

Trouble-shooting plan
Peugeot



Check the indicator light lamp

1. Switch on the ignition (do not start the engine). The indicator light in the dashboard must turn on.
 2. Start the engine and operate at idle. The indicator light must go out or may flash.
- Did the indicator light turn on? Did it go out or flash at idle?

yes

yes

no

1. Indicator light does not turn on

Turn off ignition.

Disconnect electronic ignition control unit plug.
Ground electronic ignition control unit plug
Term. 3 to vehicle ground using auxiliary lead.

Turn on the ignition.

The indicator light must turn on.

If the ignition light turns on, then take out and replace the electronic ignition control unit.

If the indicator light does not turn on, then take out the dashboard, and connect a voltmeter to the positive terminal on the indicator light and vehicle ground.

The voltmeter must indicate approx. battery voltage.

If there is no battery voltage indicated, then check for a break in the leads from the ignition-starting switch Term. 15 to the indicator light + terminal, including the resistor (750 Ω).

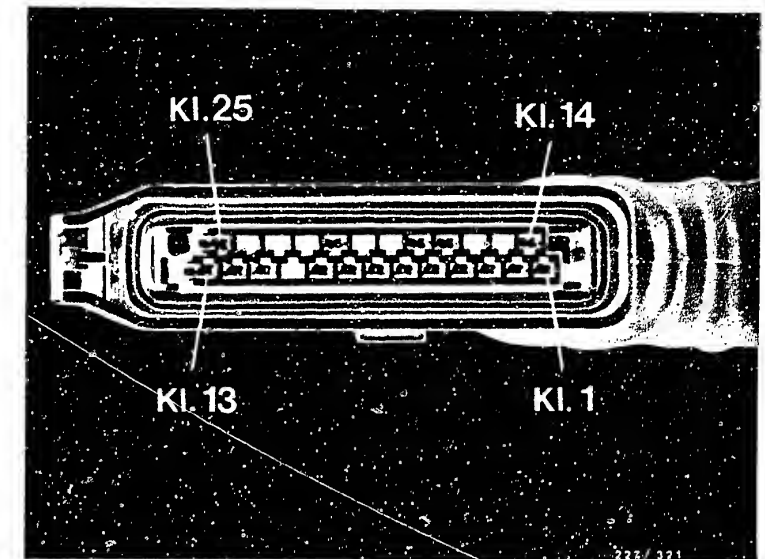
Eliminate any break.

Connect a voltmeter to battery + and indicator light terminal -. The voltmeter must indicate battery voltage.

If no battery voltage is shown, then check the lead from the indicator light, Term. - to the electronic ignition control unit plug Term. 3 for break.
Eliminate any break.

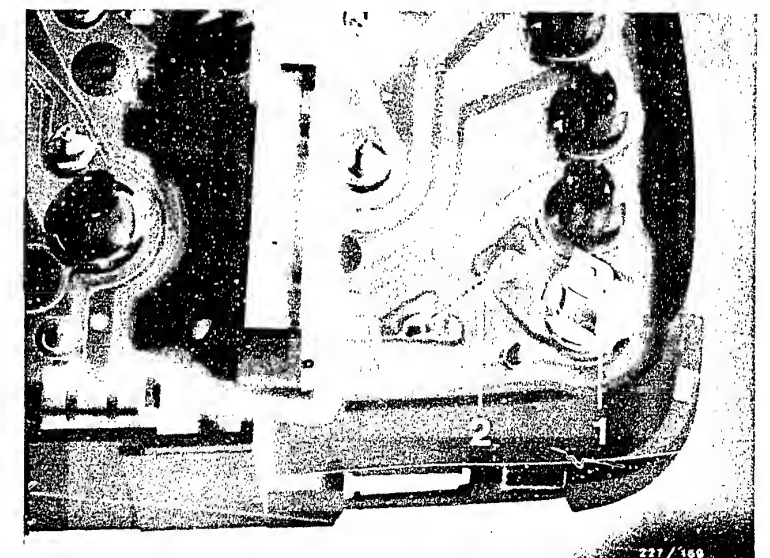
If there was no break found, then take out and replace the indicator light.

Continued on C3/C4



Electronic ignition control unit plug

1 = Indicator light
2 = Resistor, 750 Ω



C1

Trouble-shooting plan

Peugeot



C2

Trouble-shooting plan

Peugeot



Continued

2. Indicator light is on steady

Turn off ignition.

Disconnect the electronic ignition control unit plug.

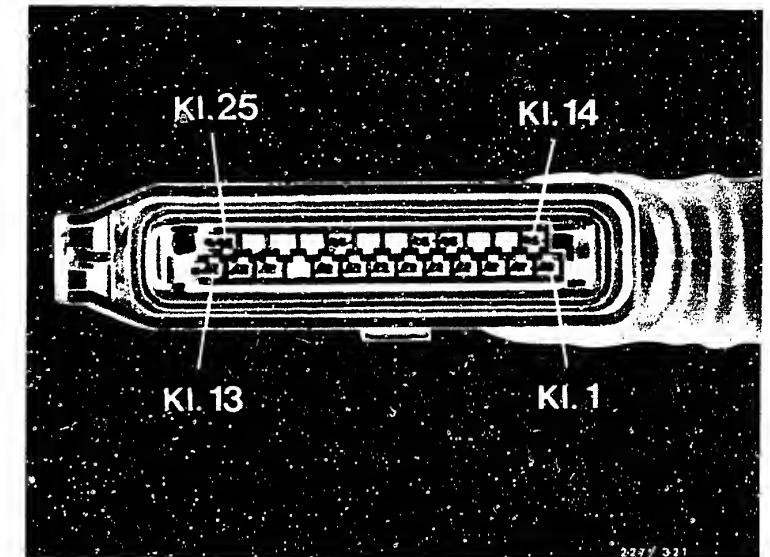
Turn on the ignition.

If the indicator light is no longer on, then take out and replace the electronic ignition control unit.

If the indicator light is still lit, then there is a ground in the indicator light and/or the connecting lead Term. 3.

Eliminate ground.

yes



Electronic ignition control unit plug

KI. = Term.

Continued on C5/C6

C3

Trouble-shooting plan

Peugeot



C4

Trouble-shooting plan

Peugeot



yes

Check the operation of the idle switch.

1. Bring engine to normal operating temperature (approx. 60°C oil temperature). Operate engine at approx. 3000 min⁻¹. Flash at the timing mark. Adjust the manual control (delay) on the ignition timing stroboscope in such a way that approx. TDC is shown. See figure at top. Close the idle switch manually (as far as the stop). See arrow, figure at middle. The ignition timing mark must now shift (engine speed can change).

2. Turn off the ignition. Disconnect the plug connection from the idle switch. See arrow, figure at middle. The throttle valve is in idle setting. Connect ohmmeter to the idle switch. The ohmmeter must show approx. 0 Ω.

Are test steps 1 and 2 O.K.?

yes

no

1. Connect voltmeter to idle switch plug Term. 87 and vehicle ground. See figure at middle.

Turn on ignition.

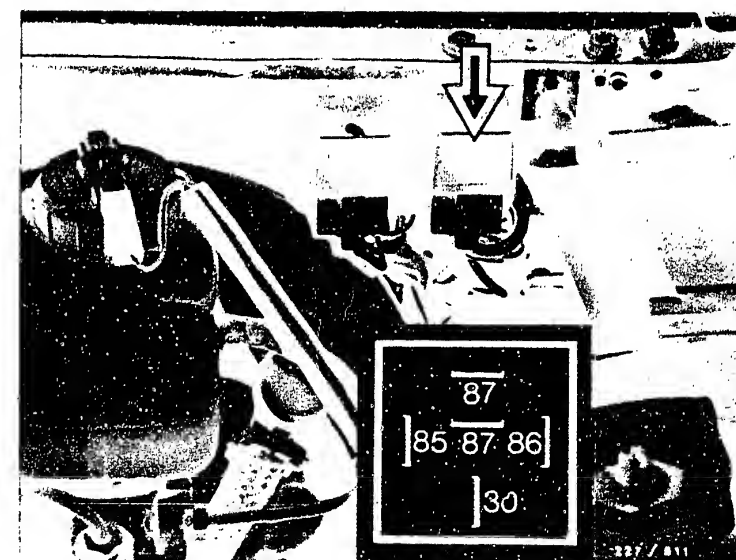
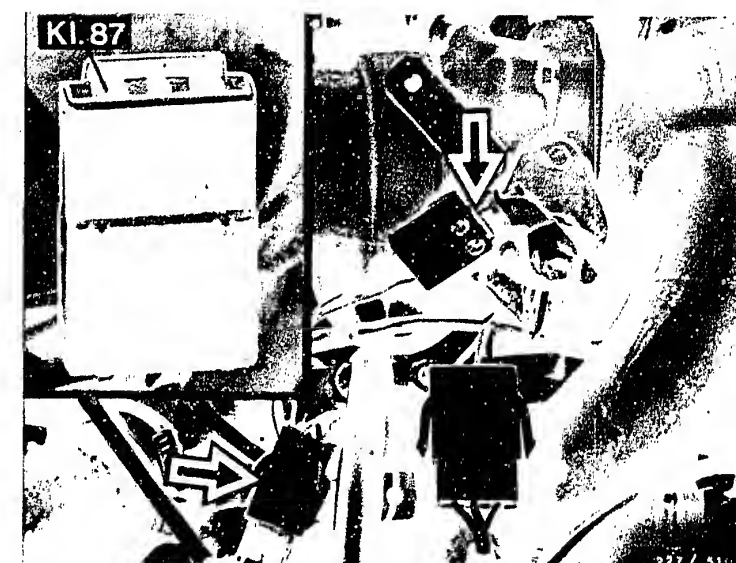
The voltmeter must indicate approx. battery voltage.

If no battery voltage is shown, check for a break in the lead from the idle switch plug Term. 87 to the auxiliary relay plug Term. 87 or in the leads from the auxiliary relay plug Term. 30, 86 and 85 (figure at bottom).

Eliminate any break.

If there was no break found, take out and replace the auxiliary relay.

Continued on C7/C8



C5

Trouble-shooting plan

Peugeot



C6

Trouble-shooting plan

Peugeot



Continued

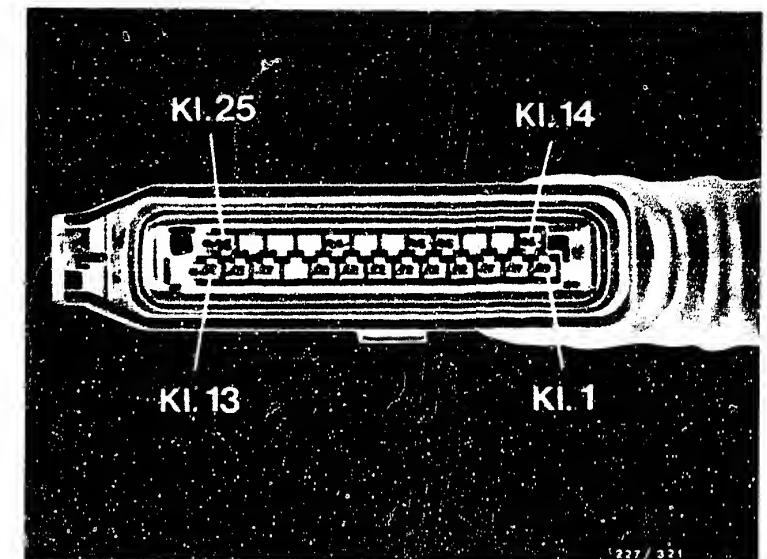
yes

2. Turn off the ignition.

Disconnect the electronic ignition control unit plug. See figure at top.

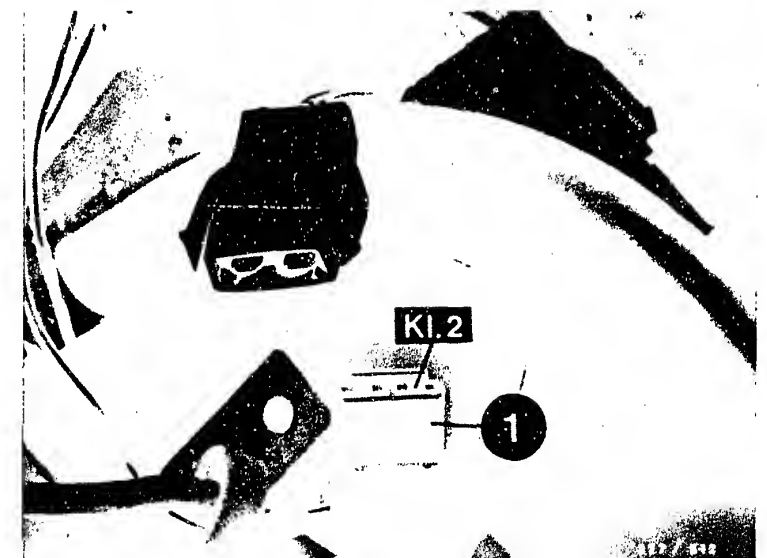
Check for a break in the leads from the electronic ignition control unit plug Term. 7 via LU-Jetronic control unit plug Term. 2 to the idle switch plug Term. 2 (figure at bottom).

Eliminate any lead.



Electronic ignition control unit plug

1 = Idle switch plug



Continued on C11/C12

Continued on C9/C10

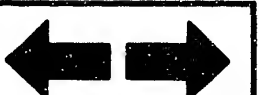
C7

Trouble-shooting plan
Peugeot



C8

Trouble-shooting plan
Peugeot



Continued

3. Connect ohmmeter to the idle switch plug.
See arrow, figure at top.

The throttle valve is in the idle setting.

The ohmmeter must indicate approx. 0Ω .

If the reading was not approx. 0Ω , adjust the idle switch using the adjusting screw. See the figure.

If the resistance value of approx. 0Ω has not yet been reached, take out and replace the idle switch.

Checking:

Open the throttle valve.

The ohmmeter must indicate $\infty \Omega$.

If approx. 0Ω is shown, take out and replace the idle switch.

If points 1, 2, and 3 were O.K., take out and replace the electronic ignition control unit.



1 = Idle switch

2 = Adjusting screw for idle switch

yes

Continued on C11/C12

C9

Trouble-shooting plan

Peugeot



C10

Trouble-shooting plan

Peugeot



yes

Check the initial ignition-timing adjustment.

The idle switch plug has been disconnected.

Jump the idle switch plug using an auxiliary lead (figure at top).

See arrow, figure in the middle.

Operate engine at $900 \dots 1100 \text{ min}^{-1}$.

Flash at the ignition timing mark.

The initial ignition-timing adjustment must be 10° before TDC.

See figure at bottom.

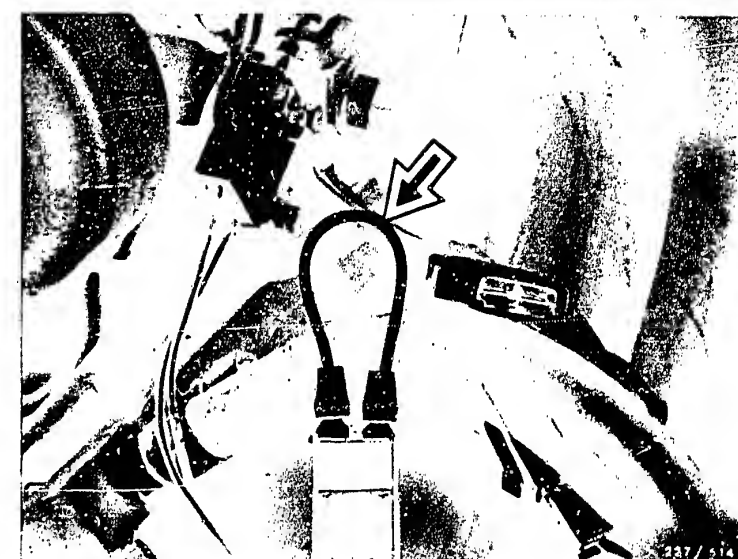
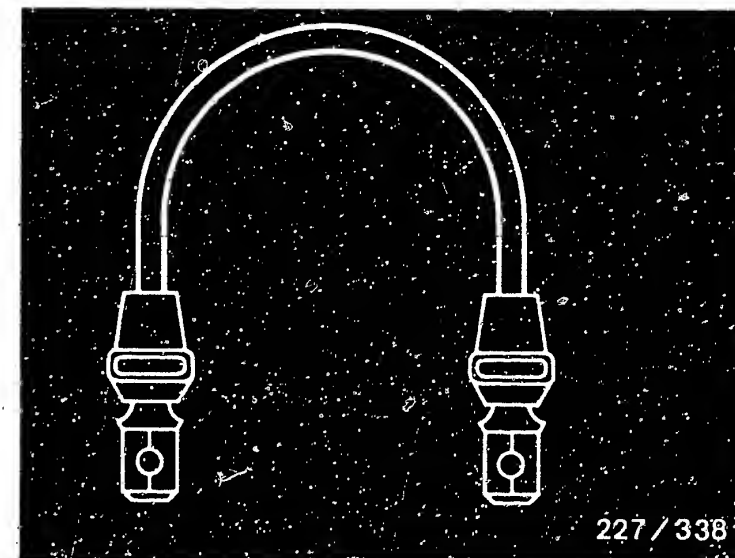
Is the initial ignition-timing adjustment O.K.?

no

Release the fastening for the ignition distributor, and turn the ignition distributor until reaching 10° before TDC.

yes

Continued on C13/C14



C11

Trouble-shooting plan

Peugeot

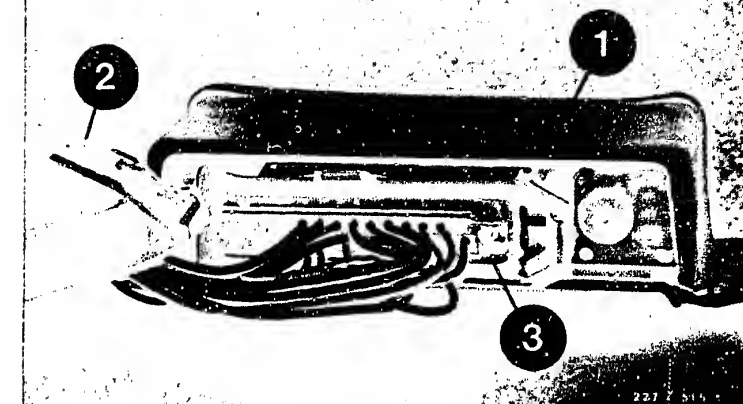
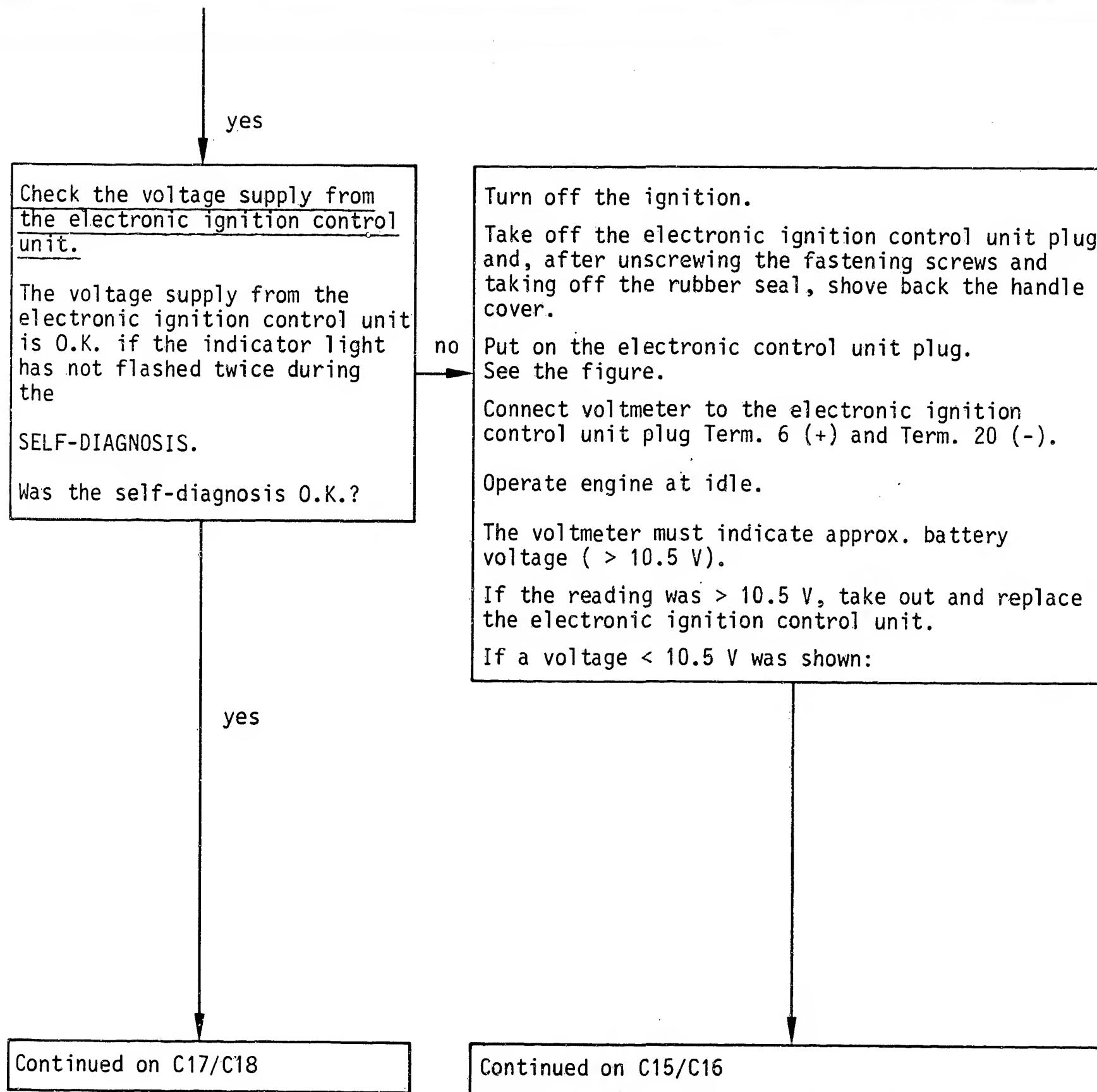


C12

Trouble-shooting plan

Peugeot





1 = Electronic ignition control unit
2 = Handle cover
3 = Plug

Continued .

yes

1. Connect voltmeter (+) to battery terminal plus and electronic ignition control unit plug Term. 6 (-).

Operate engine at idle.

The maximum voltage drop allowed is 0.5 V.

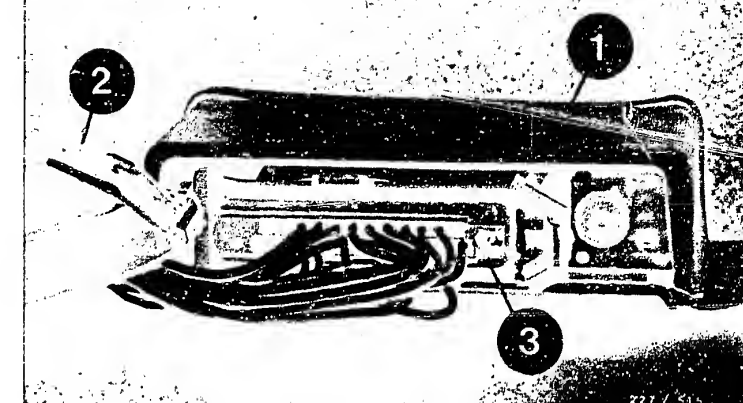
Eliminate any voltage drop.

2. Connect the voltmeter (-) to battery terminal minus and to the electronic ignition control unit plug Term. 20 (+).

Operate engine at idle.

The max. voltage drop allowable is 0.5 V.

Eliminate any drop in voltage.



- 1 = Electronic ignition control unit
2 = Handle cover
3 = Plug

Continued on C17/C18

C15

Trouble-shooting plan

Peugeot

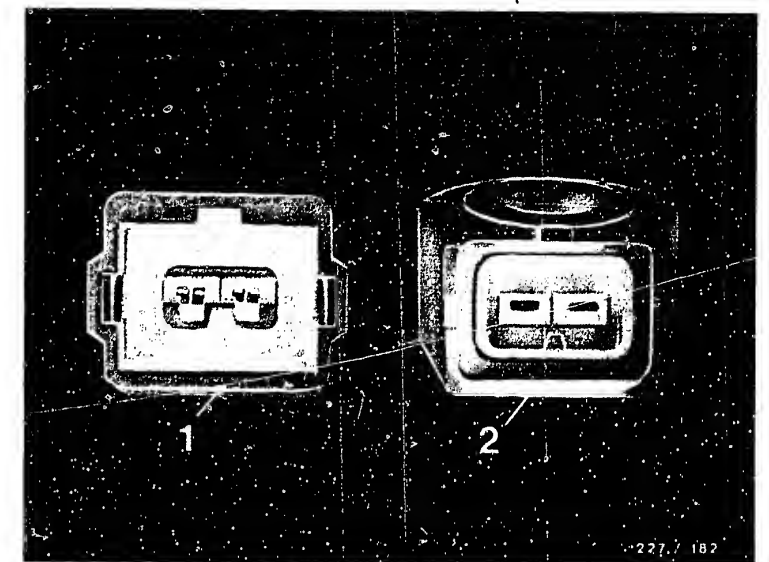
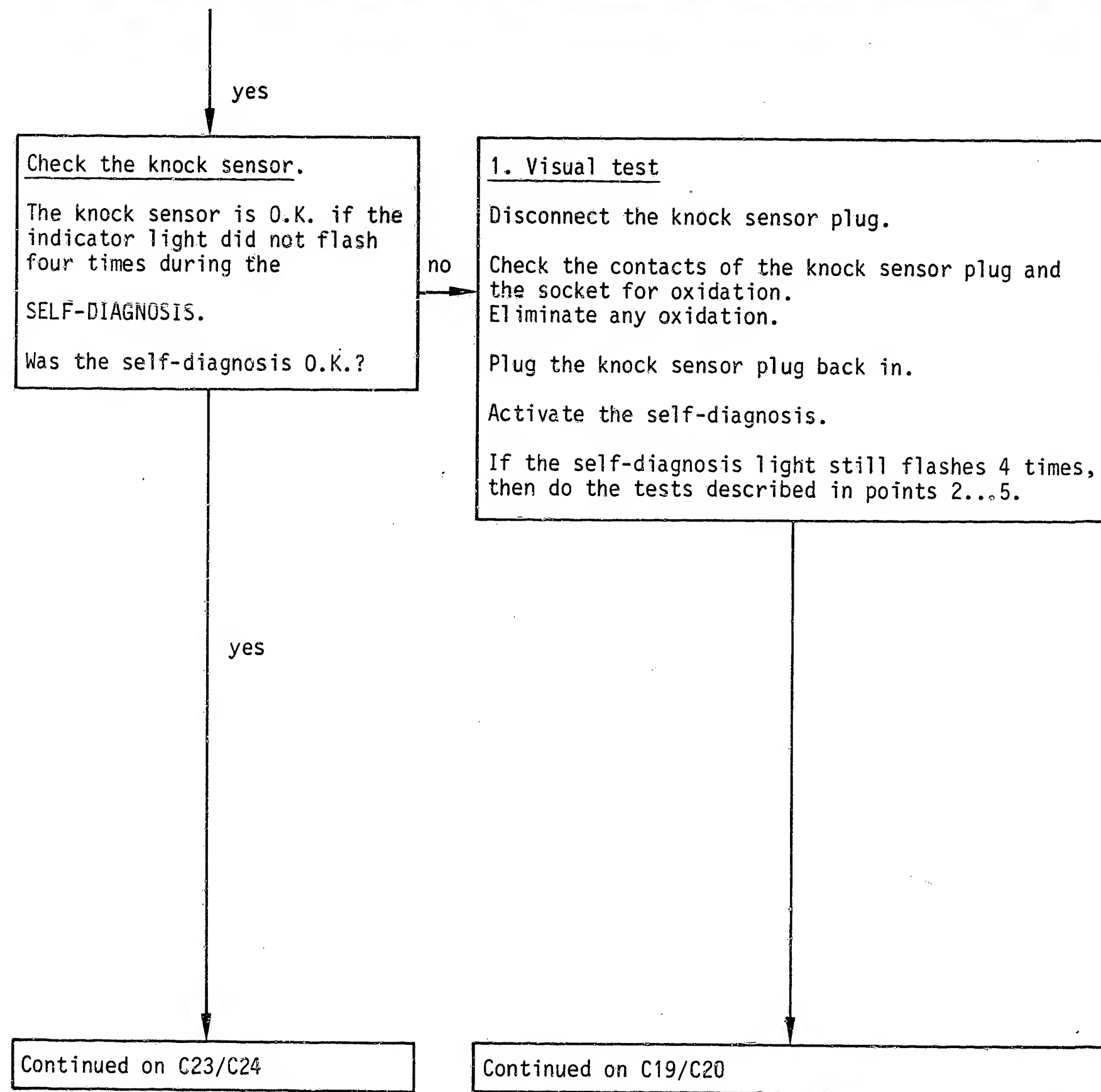


C16

Trouble-shooting plan

Peugeot





1 = Knock sensor plug
2 = Knock sensor socket



Continued

Turn off the ignition.
Disconnect the knock sensor and electronic ignition control unit plugs.

2. Connect ohmmeter to:

Knock sensor plug

Ignition control unit
plug

Term. 12

and

Term. 12

Term. 13

and

Term. 13

Ohmmeter must show continuity. Otherwise eliminate any break.

3. Connect ohmmeter to:

Knock sensor plug

Knock sensor plug

Term. 13

and

Term. 12

The ohmmeter must indicate a break (infinite).
If the ohmmeter shows continuity, eliminate the ground connection from knock sensor lead Term. 13 to Term. 12.

4. Put on the knock sensor plug.

Connect ohmmeter to:

Ignition control unit
plug

Ignition control unit
plug

Term. 12

and

Term. 13

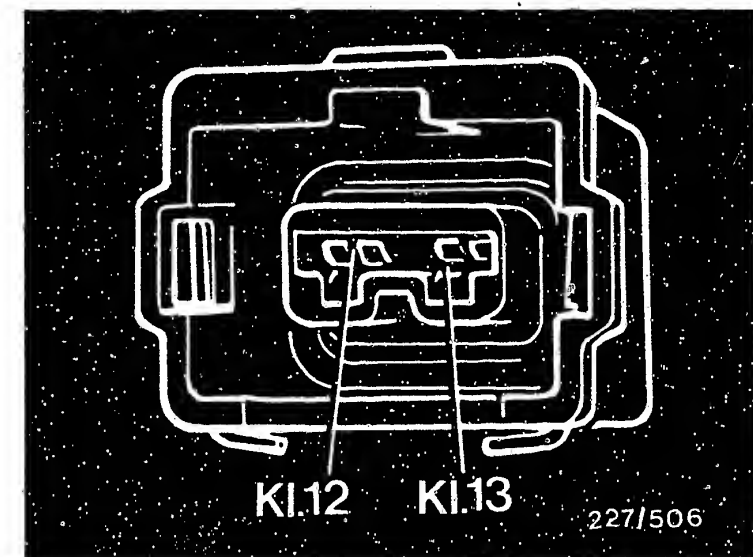
Ohmmeter must indicate 270...330 k Ω .

If the resistance value is not O.K., take out and replace the knock sensor.

yes

Continued on C23/C24

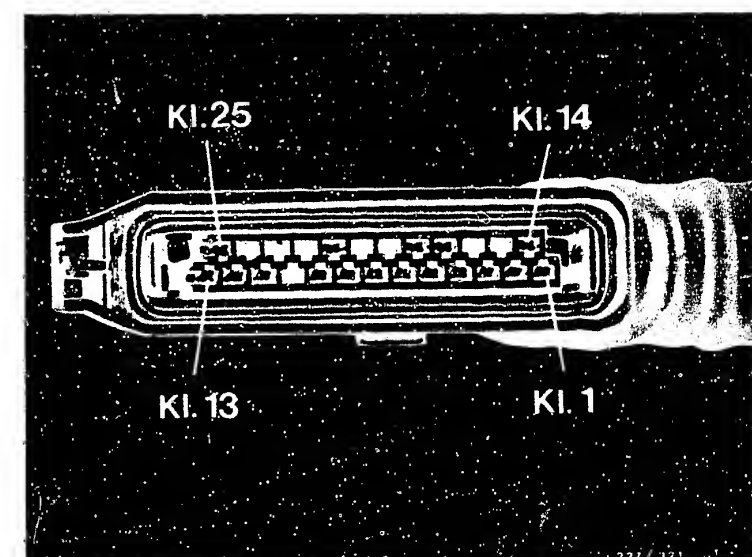
Continued on C21/C22



1 = Knock sensor plug

KI. = Term.

Electronic ignition control unit plug



C19

Trouble-shooting plan

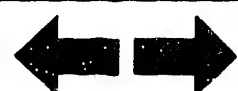
Peugeot



C20

Trouble-shooting plan

Peugeot



Continued

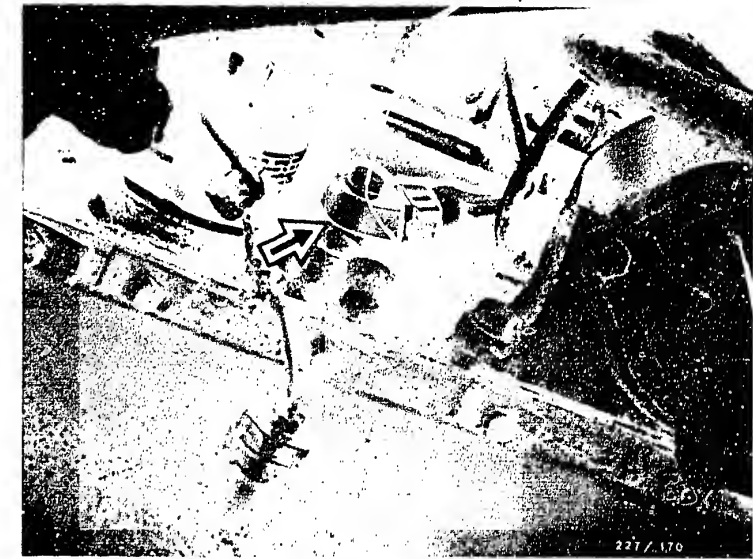
yes

5. Check tightening torque 11 ... 15 Nm for the knock sensor fastening screw.

If points 1 to 5 are O.K., then take out and replace the knock sensor.

Activate the self-diagnosis.

If the self-diagnosis still flashes 4 times, then put in the "old" knock sensor once again and take out and replace the electronic ignition control unit.



Knock sensor

Continued on C23/C24

C21

Trouble-shooting plan

Peugeot

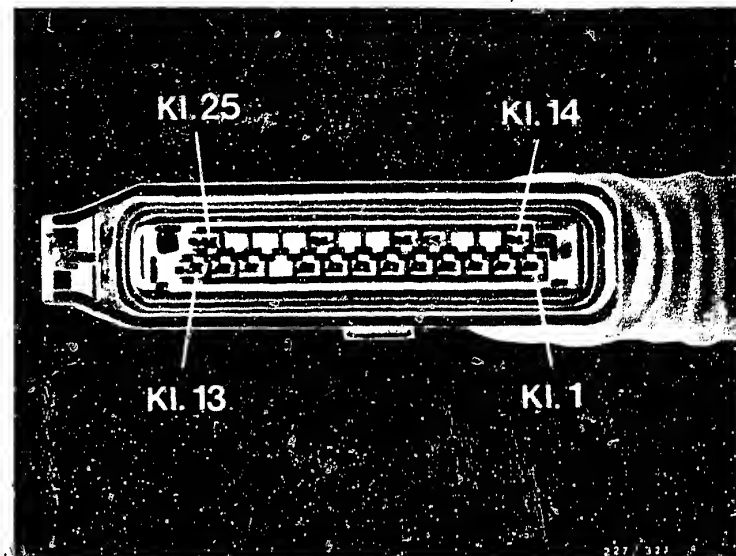
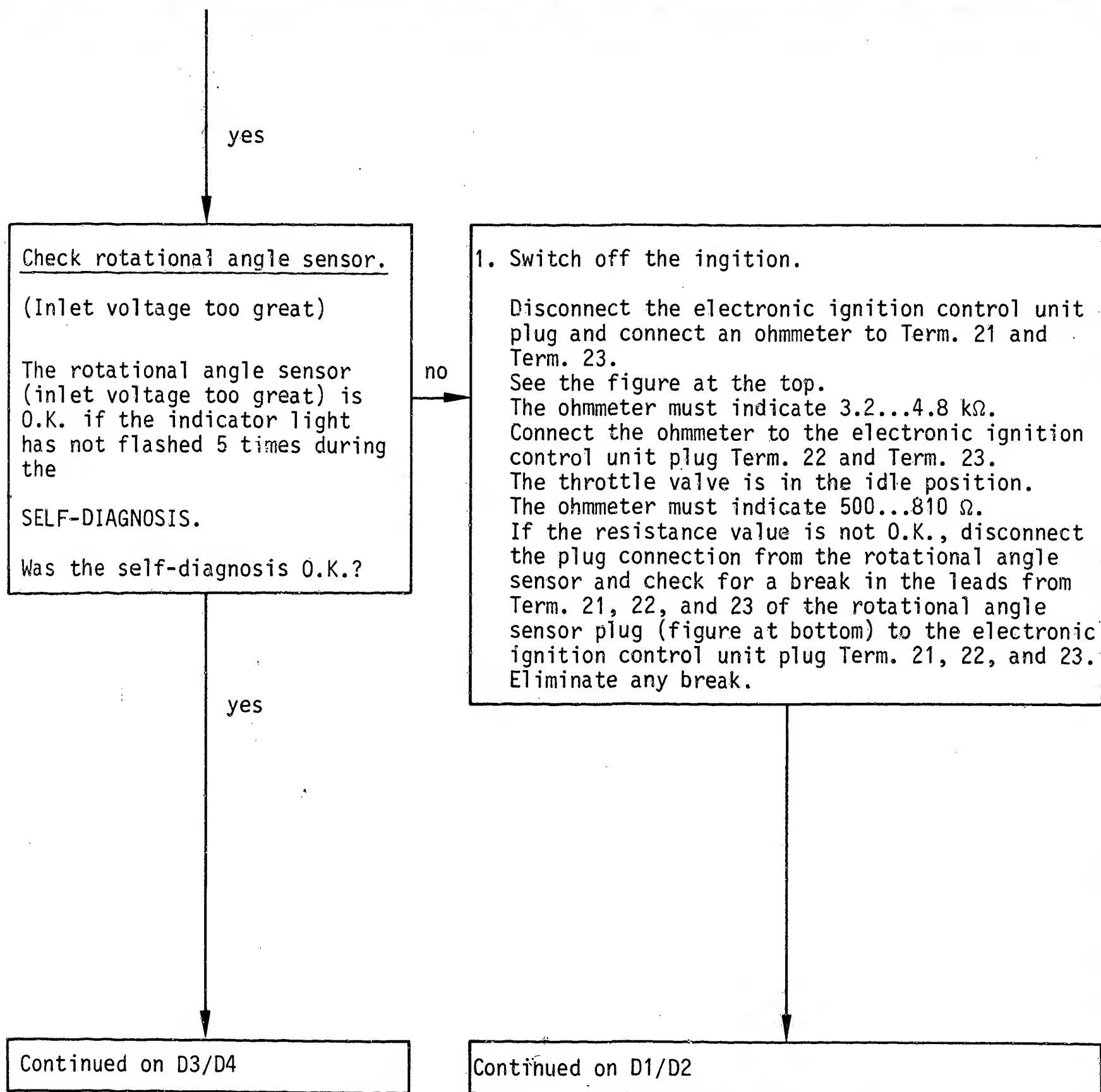


C22

Trouble-shooting plan

Peugeot

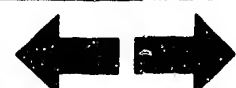
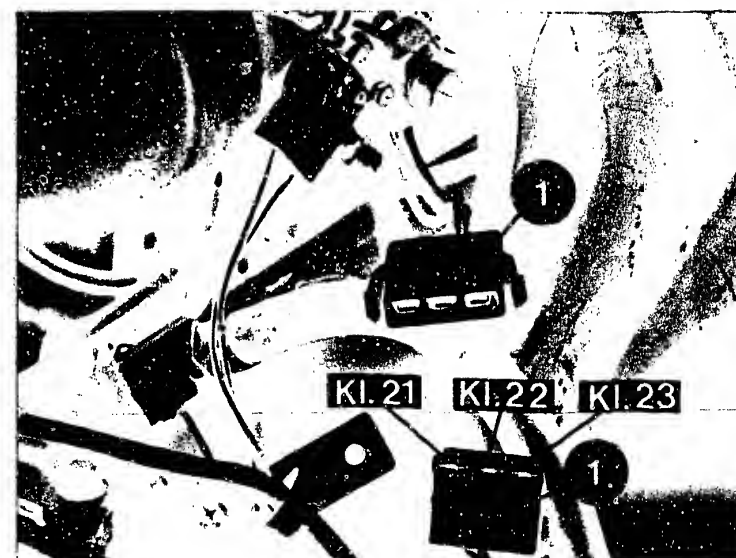




Electronic ignition control unit plug

KI. = Term.

1 = Plug connection for rotational angle sensor



Continued

2. The electronic ignition control unit plug has been disconnected.

Disconnect the rotational angle sensor plug connection.

See the figure at the bottom.

Connect a voltmeter to the rotational angle sensor plug, Term. 22 (+) and to vehicle ground.

Turn on the ignition.

The voltmeter must not indicate any voltage.

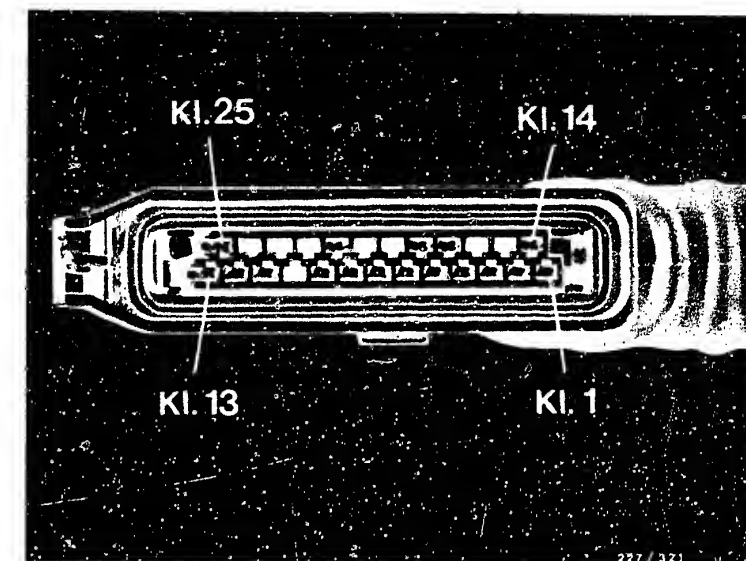
If a voltage is indicated, the lead from Term. 22 of the rotational angle sensor plug to the electronic ignition control unit plug is connected to battery plus.

Eliminate the connection.

If no voltage was shown, take out and replace the electronic ignition control unit.

yes

Continued on D3/D4



Electronic ignition control unit plug

KI. = Term.

1 = Plug connection for rotational angle sensor



D1

Trouble-shooting plan

Peugeot



D2

Trouble-shooting plan

Peugeot



yes

Check the rotational angle sensor

(inlet voltage too small)

and the load signal.

The rotational angle sensor (inlet voltage too small) and/or the load signal are in order if the indicator light did not flash 6 times during the

SELF-DIAGNOSIS.

Was the self-diagnosis in order?

yes

Continued on D11/D12

no

1. Switch off the ignition.

Take off the electronic ignition control unit plug, disconnect the plug connection for the rotational angle sensor. See figure at bottom.

Connect voltmeter to battery plus and to rotational angle sensor plug Term. 22 (-).

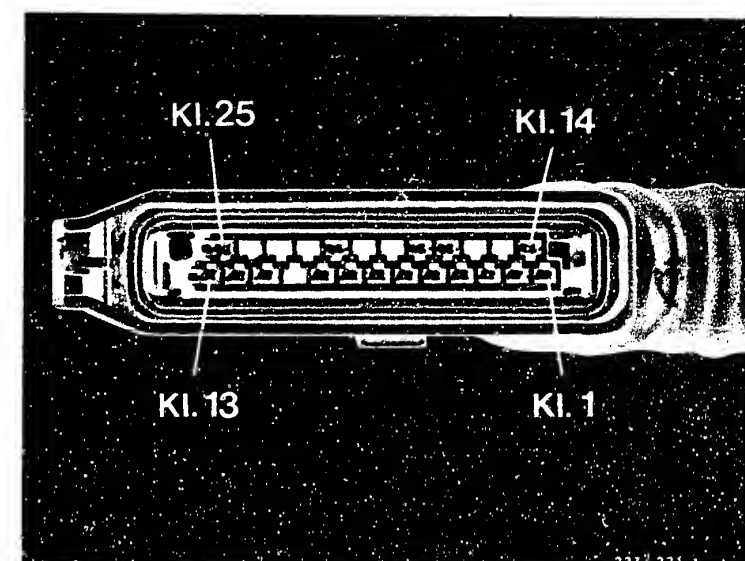
The voltmeter must not indicate any voltage.

If a voltage is indicated, the lead from Term. 22 on the rotational angle sensor plug to the electronic ignition control unit plug is grounded.

Eliminate the ground.

2. The only voltmeters that can be used for the measurement that follows are those with an internal resistance $R_i \geq 100 \text{ k}\Omega$ and a resolution of 10 mV.

Continued on D5/D6



Electronic ignition control unit plug
KI. = Term.

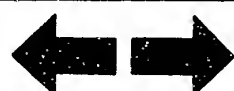
1 = Plug connection for rotational angle sensor



D3

Trouble-shooting plan

Peugeot



D4

Trouble-shooting plan

Peugeot



Continued

Switch off the ignition.

Put on the electronic ignition control unit plug, reconnect the rotational angle sensor plug.

Connect the voltmeter to the rotational angle sensor plug connection Term. 21 (+) and Term. 23 (-).

See figure at top.

Turn on the ignition.

The voltmeter must indicate 3.5...4.5 V.
Note down the voltage value.

If the voltage value is not in order, take out and replace the electronic ignition control unit.

3. Connect the voltmeter to the rotational angle sensor plug connection Term. 22 (+) and Term. 23 (-).

See figure at bottom.

Multiply the voltage value noted down at Point 2 by 0.17.

Turn on the ignition.

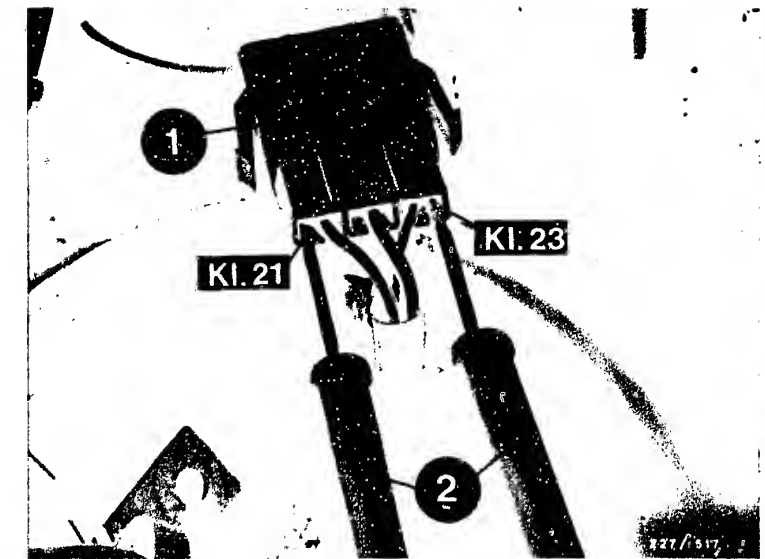
The voltage indicated must agree with the mathematically calculated voltage (to the second digit after the decimal).

If that is not the case, adjust the rotational angle sensor.

yes

Continued on D11/D12

Continued on D7/D8



1 = Plug connection for rotational angle sensor
2 = Test prods
Kl. = Term.



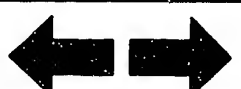
D5

Trouble-shooting plan
Peugeot



D6

Trouble-shooting plan
Peugeot



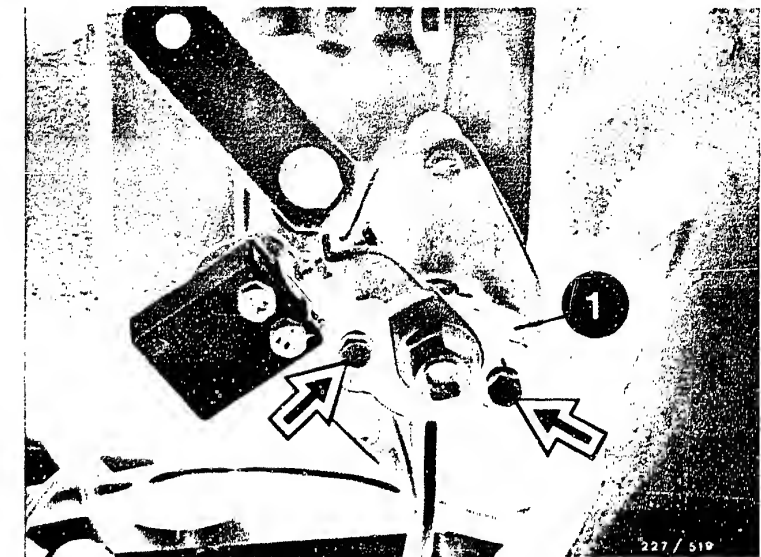
Continued

Adjustment of the rotational angle sensor:

The throttle valve is in the idle position.

Slightly release the fastening screws on the rotational angle sensor (arrow, figure at top) and turn the rotational angle sensor until the voltage calculated before is displayed on the voltmeter.

Tighten the fastening screws.



1 = Rotational angle sensor

yes

Continued on D11/D12

Continued on D9/D10



Continued

4. Switch off the ignition.

Disconnect the electronic ignition control unit plug and, after unscrewing the fastening screws and taking off the rubber seal, push back the handle cover. See figure at top.

Put on the electronic ignition control unit plug and connect the dwell angle tester to Term. 8 and to vehicle ground.

Operate the engine at idle.

Take reading for dwell angle and note it down.

Briefly step on the gas and watch the reading for dwell angle.

The dwell angle indicated previously must change noticeably.

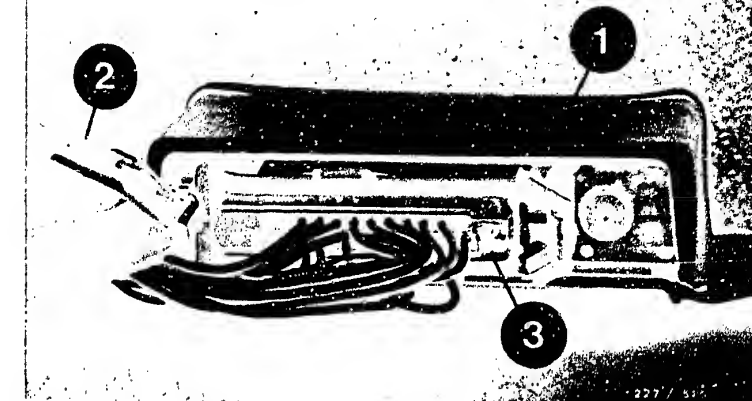
If the dwell angle did not change, check the lead from the electronic ignition control unit Term. 8 to LU-Jetronic control unit plug Term. 6 for a break or for a ground

Eliminate any break or ground.

If there was no break or ground found, then take out and replace the LU-Jetronic control unit.

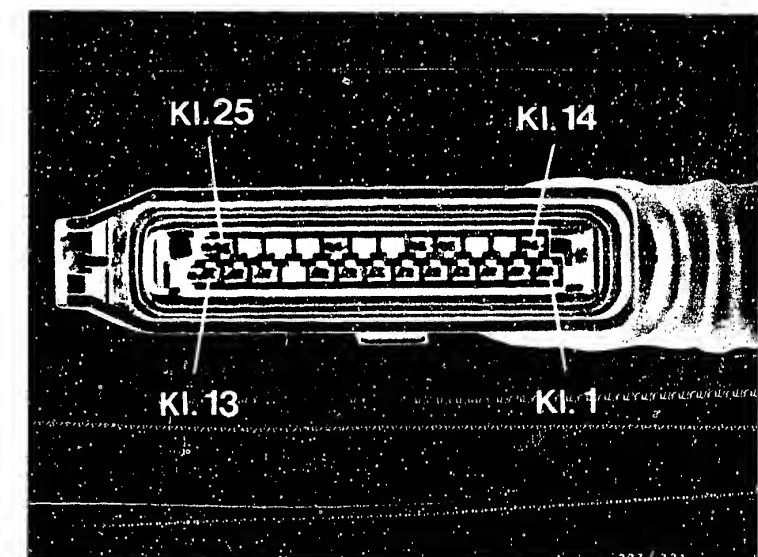
yes

Continued on D11/D12



- 1 = Electronic ignition control unit
- 2 = Handle cover
- 3 = Plug
- K1. = Term.

LU-Jetronic control unit plug



D9

Trouble-shooting plan
Peugeot



D10

Trouble-shooting plan
Peugeot



yes

Check full load signal.

1. Switch off the ignition. Disconnect the electronic ignition control unit plug and, after unscrewing the fastening screws and taking off the rubber seal, push back the handle cover.

Put on the electronic ignition control unit plug.

See figure at top.

Connect the electronic ignition control unit plug Term. 18 (+) to vehicle ground.

See figure at top.

Operate engine at approx. 1000 min⁻¹ for at least 5 sec.

The voltmeter may have a reading from 0 V up to max. 1 V.

2. Jump the electronic ignition control unit plug Term. 21 and Term. 22 using an auxiliary lead. See the figure at the top. Operate the engine at > 3500 min⁻¹.

The voltage meter must indicate battery voltage.

Is the voltage O.K. in points 1 and 2?

yes

Continued on D13/D14

no

If more than 1 volt was shown in point 1, turn off the ignition.

Remove the auxiliary lead from the electronic ignition control unit plug Term. 21 and Term. 22.

Disconnect the electronic ignition and the LU-Jetronic control unit plugs.

Connect voltmeter to the electronic ignition control unit plug Term. 18 (+) and to vehicle ground.

If a voltage > 1 volt is still shown, the lead from the electronic ignition control unit plug

Term. 18 to the LU-Jetronic control unit plug Term. 3 is connected to battery plus.

Eliminate the connection.

Put on the LU-Jetronic control unit plug.

Turn on the ignition.

If a voltage > 1 volt is now shown, take out and replace the LU-Jetronic control unit.

Switch off the ignition.

Disconnect the LU-Jetronic control unit plug and connect the voltmeter to Term. 3 (+) and to vehicle ground. Put on the electronic ignition control unit plug.

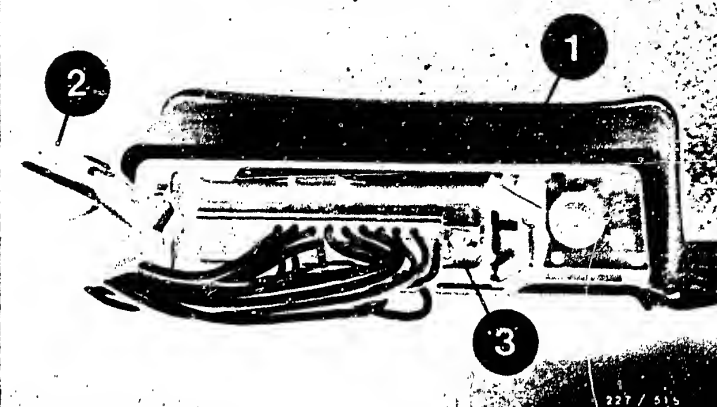
Turn on the ignition.

If a voltage > 1 volt is now indicated, take out and replace the electronic ignition control unit.

If no battery voltage was indicated in Point 2, check the lead from the electronic ignition control unit plug Term. 18 to the LU-Jetronic control unit plug Term. 3 for ground.

Eliminate the ground.

If there was no ground found, take out and replace the electronic ignition control unit.



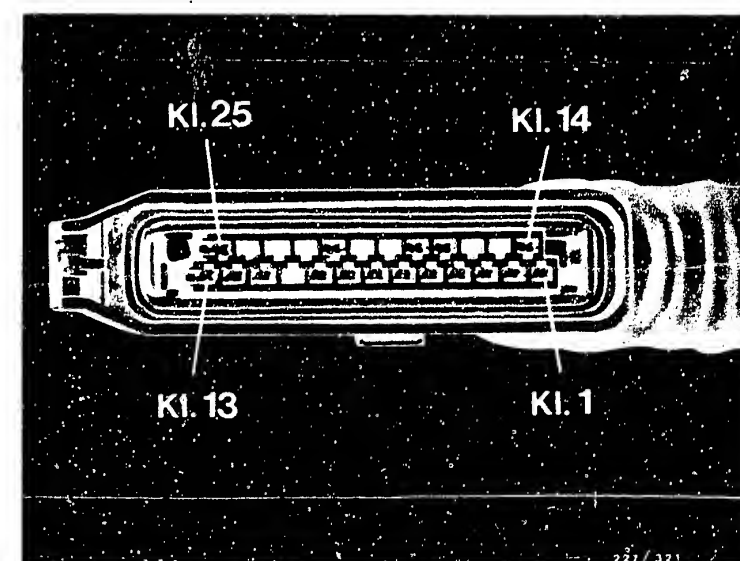
1 = Electronic ignition control unit

2 = Handle cover

3 = Plug

Kl. = Term.

LU-Jetronic control unit plug



D11

Trouble-shooting plan

Peugeot

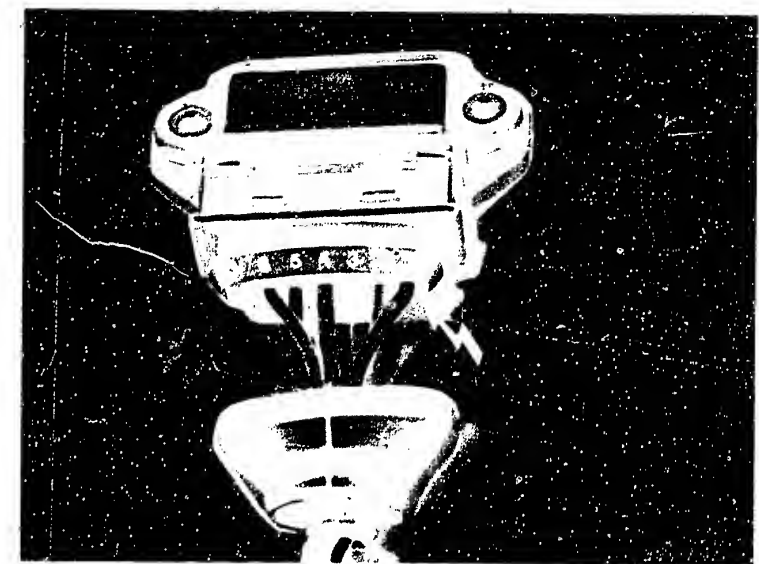
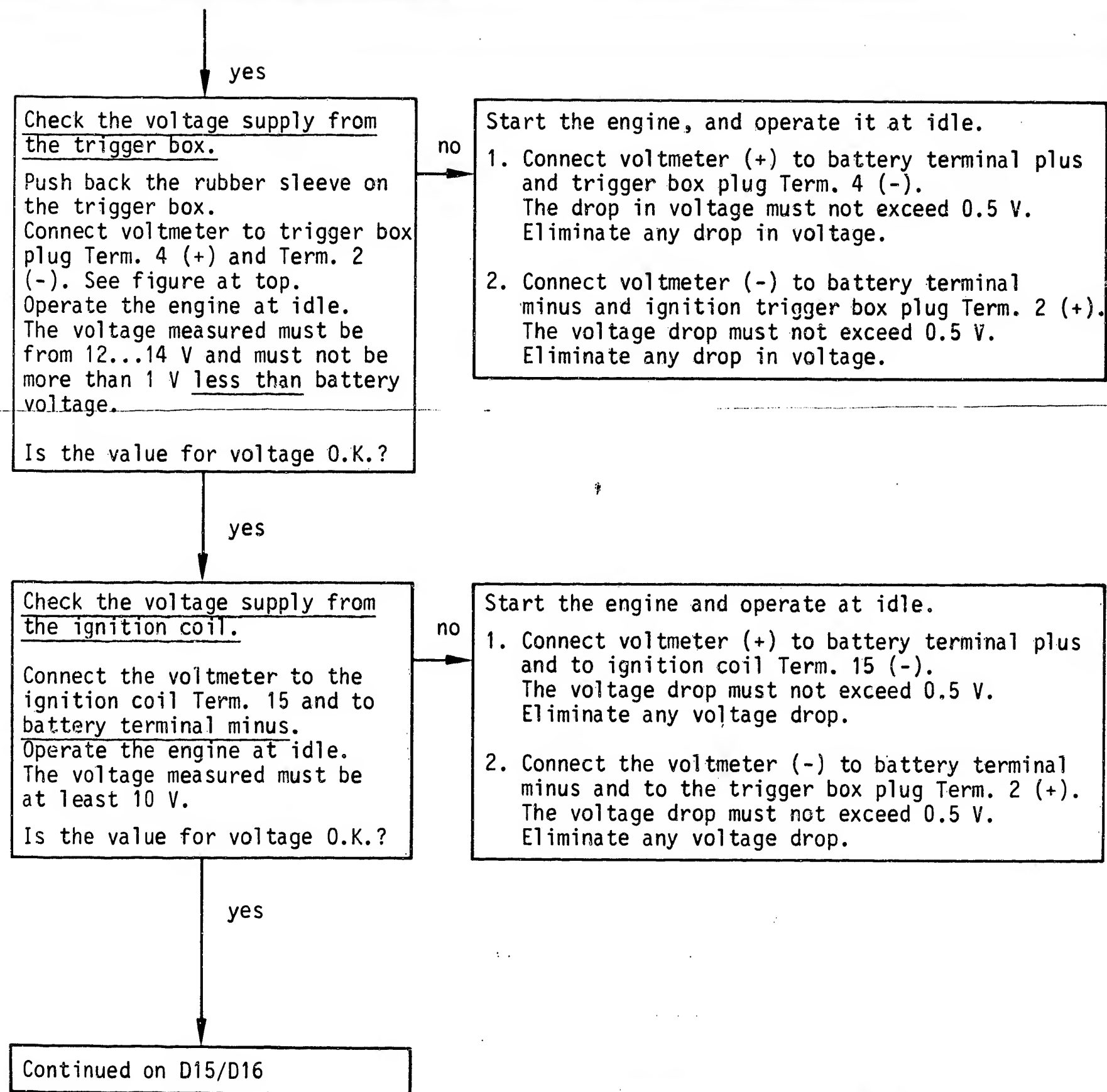


D12

Trouble-shooting plan

Peugeot





⚡ = Dangerous voltages
(400 V - 25 kV)

D13

Trouble-shooting plan

Peugeot



D14

Trouble-shooting plan

Peugeot



yes

Check the primary voltage.

(Where MOT-Series is available)

Connect the oscilloscope (e.g., MOT 201) to the ignition coil according to operating instructions.

Operate the engine at idle.

The primary voltage measured must be from 295 ... 365 V.

(See figure).

Is the value for voltage O.K.?

no

Take out and replace the trigger box.

yes

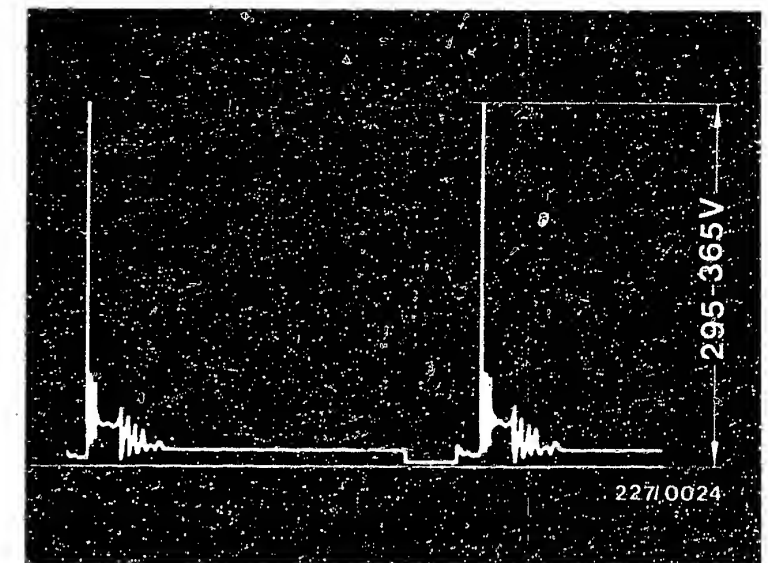
Ignition system is O.K.

Testing is ended.

Tests after E1 are no longer necessary.

Note:

If the customer complaint still has not been corrected, then there are additional possible defects on the fuel system, or the engine is mechanically not in order.



D 15

Trouble-shooting plan

Peugeot



D 16

Trouble-shooting plan

Peugeot



No primary signal and/or no
ignition spark

(Continuation from B15/B16)

yes

Check voltage supply from the
trigger box.

Disconnect the trigger box plug.

Connect voltmeter to the trigger
box plug Term. 4 (+) and Term. 2
(-).

See figure at top.

Turn on the ignition.

The voltmeter must now indicate
battery voltage.

Is the voltage value O.K.?

yes

Continued on E5/E6

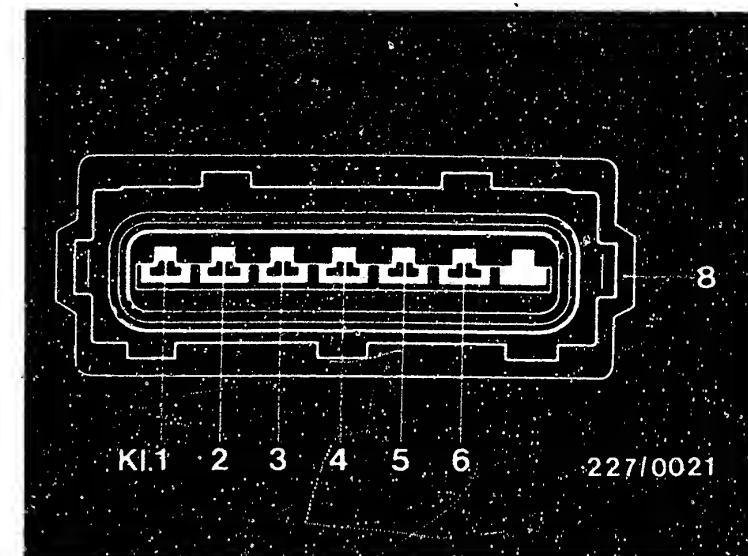
no

Disconnect the supply relay.
See arrow, figure at bottom.

Turn on the ignition.

1. Connect the voltmeter to the relay plug Term.
86 (+) and to vehicle ground.
The voltmeter must indicate battery voltage.
If the battery voltage is not present, elimin-
ate the break in the lead from battery terminal
plus via the ignition-starting switch to the
relay plug Term. 86.
2. Connect the voltmeter to battery terminal plus
and to relay plug Term. 85 (-).
The voltmeter must indicate battery voltage.
If battery voltage is not present, eliminate
the break in the supply lead to Term. 85.

Continued on E3/E4



8 = Trigger box plug
K1. = Term.



E1

Trouble-shooting plan

Peugeot



E2

Trouble-shooting plan

Peugeot



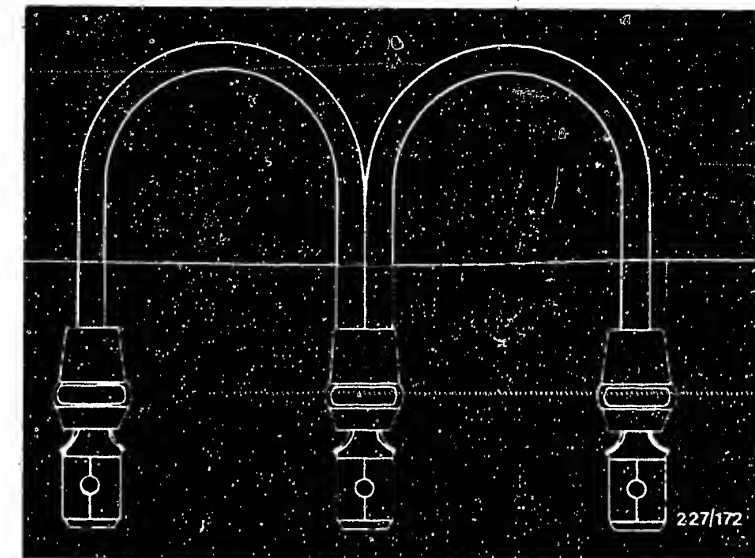
Continued

3. Connect relay plug Term. 30 and the two Term. 87 using an auxiliary lead (jumper). See arrow, figure at bottom. Connect voltmeter to vehicle ground and one after another to relay plug Term. 30, 87, and 87 and trigger box Term. 4. In each case, the voltmeter must indicate battery voltage. If battery voltage is not present, eliminate any break.
4. Connect the voltmeter to trigger box plug Term. 4 (+) and Term. 2 (-). The voltmeter must now show battery voltage. If battery voltage is not present, check trigger box plug grounding lead Term. 2 for a break. Eliminate any break.

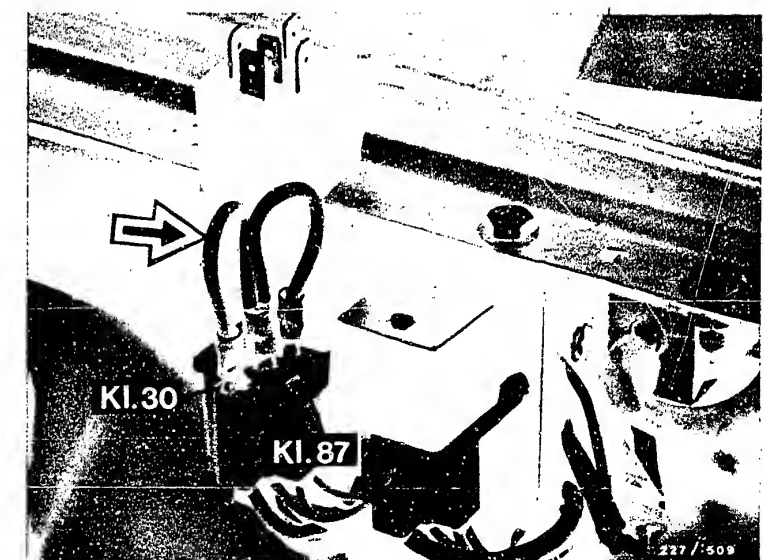
If points 1, 2, 3, and 4 are O.K., take out and replace the supply relay.

yes

Continued on E5/E6



Auxiliary lead (jumper)
Kl. = Term.



E3

Trouble-shooting plan
Peugeot



E4

Trouble-shooting plan
Peugeot



yes

Check the primary circuit

The trigger box plug is disconnected. Connect voltmeter to trigger box plug Term. 1 (+) and Term. 2 (-).

Turn on the ignition.

The voltmeter must indicate battery voltage.

Is the voltage value in order?

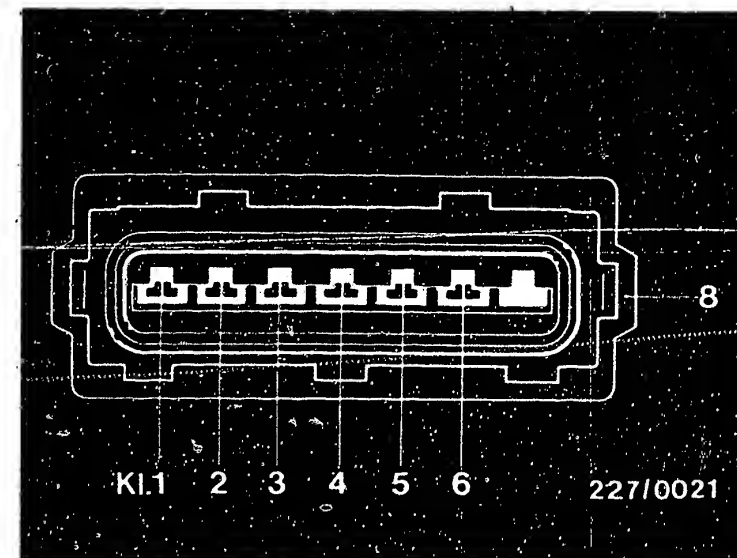
no

Check for a break in the supply lead from supply relay Term. 87 (arrow, figure at bottom) to the ignition coil Term. 15, primary winding of the ignition coil, and the lead from the ignition coil Term. 1 to the trigger box plug Term. 1.

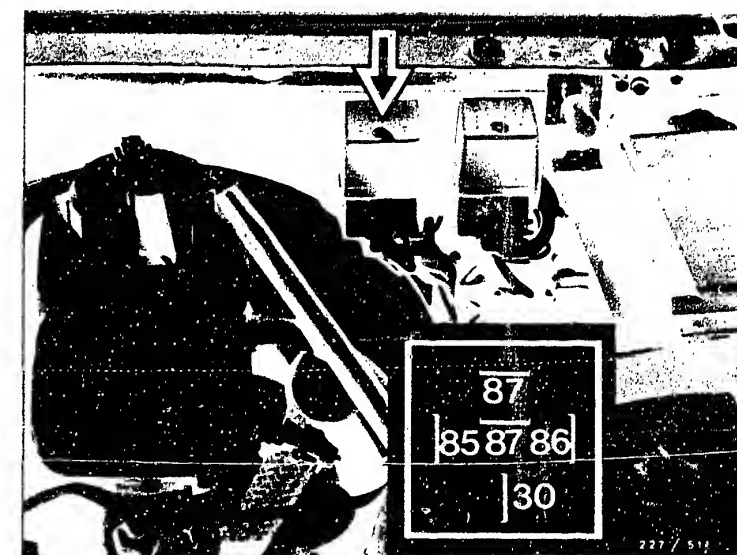
Eliminate any lead.

yes

Continued on E7/E8



8 = Ignition trigger box plug
K1. = Term.



E5

Trouble-shooting plan
Peugeot



E6

Trouble-shooting plan
Peugeot



yes

Check the voltage supply from the electronic ignition control unit.

Switch off the ignition.

Disconnect the electronic ignition control unit plug and connect voltmeter to Term. 6 (+) and Term. 20 (-). See figure at top.

Switch on the ignition.

The voltmeter must indicate battery voltage.

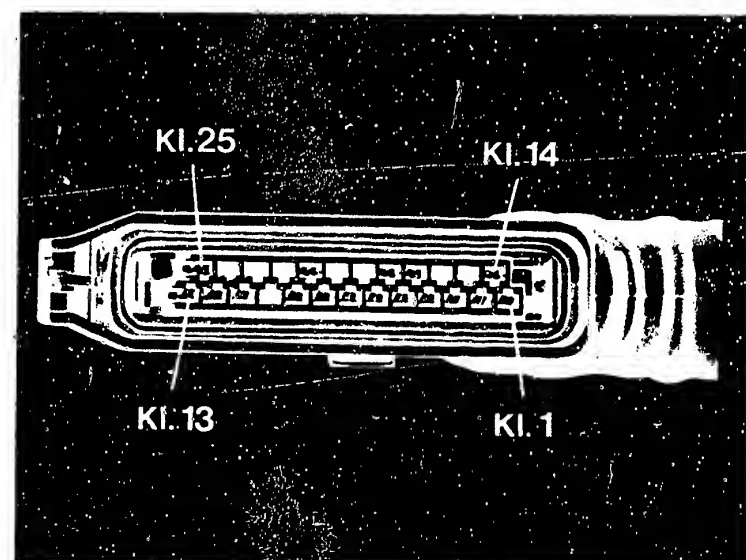
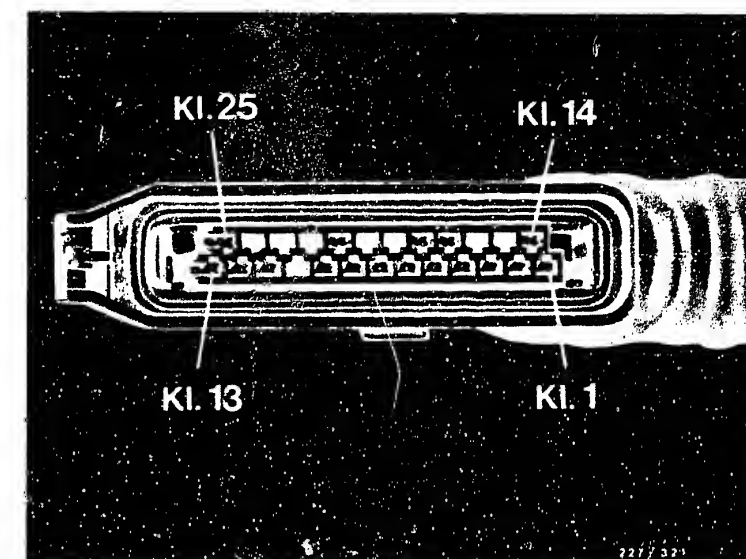
Is the voltage O.K.?

no

1. Check for a break in the lead from the electronic ignition control unit plug Term. 6 to the supply relay Term. 87. (See arrow, figure at center).
- Eliminate any break.
2. Check for a break in the lead from the electronic ignition control unit plug Term. 20 via the LU-Jetronic control unit plug Term. 5 (figure at bottom), to the LU-Jetronic ground (Term. 5).
- Eliminate any break.

yes

Continued on E9/E10



E7

Trouble-shooting plan
Peugeot



E8

Trouble-shooting plan
Peugeot



yes

Check the ignition distributor plug and socket.

Press the wire safety lock away from the ignition distributor plug.
See arrow, figure at top.

Disconnect ignition distributor plug

Visual inspection:

Check contacts on the ignition distributor plug and socket for oxidation.

Eliminate any oxidation.

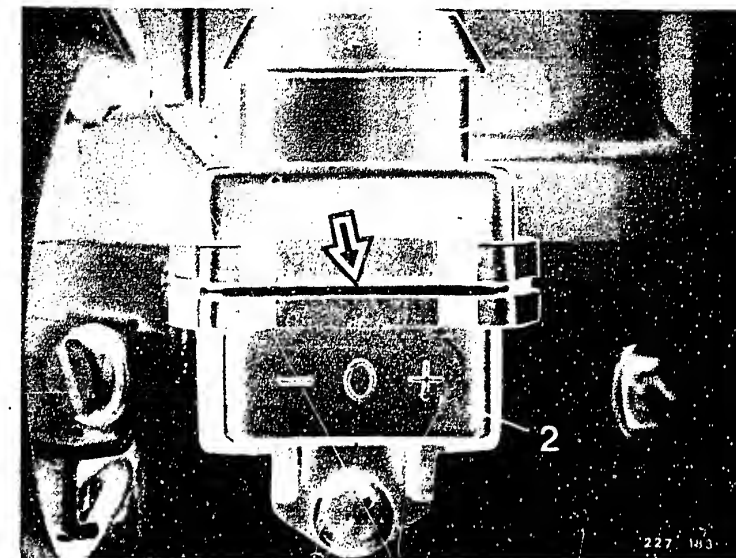
Reconnect the ignition distributor plug.

Start the engine.

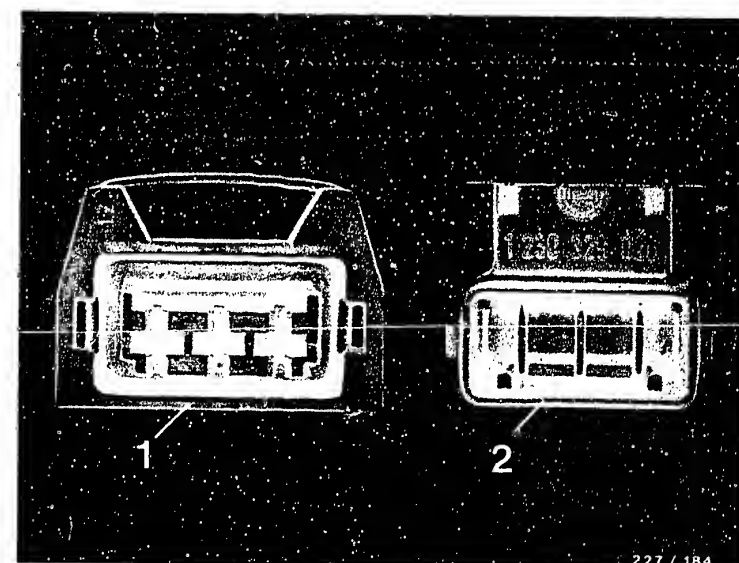
If there still is no primary signal and/or ignition spark, continue testing.

yes

Continued on E11/E12



1 = Ignition distributor plug
2 = Ignition distributor socket



E9

Trouble-shooting plan

Peugeot



E10

Trouble-shooting plan

Peugeot



yes

Check the voltage supply to the magnetic pulse generator.

Shove back the rubber sleeve from the magnetic pulse generator.

Connect voltmeter to magnetic pulse generator Term. 4 (+) and Term. 10 (-).

Turn on the ignition.

The voltmeter must indicate a voltage > 10 V.

Is the voltage shown O.K.?

no

Switch off the ignition.

Disconnect the ignition distributor and electronic ignition control unit plugs.

Using test prods, connect an ohmmeter one after another to:

<u>Ignition distributor plug</u>		<u>Electronic ignition control unit plug</u>
Term. 4	and	Term. 4
Term. 10	and	Term. 10

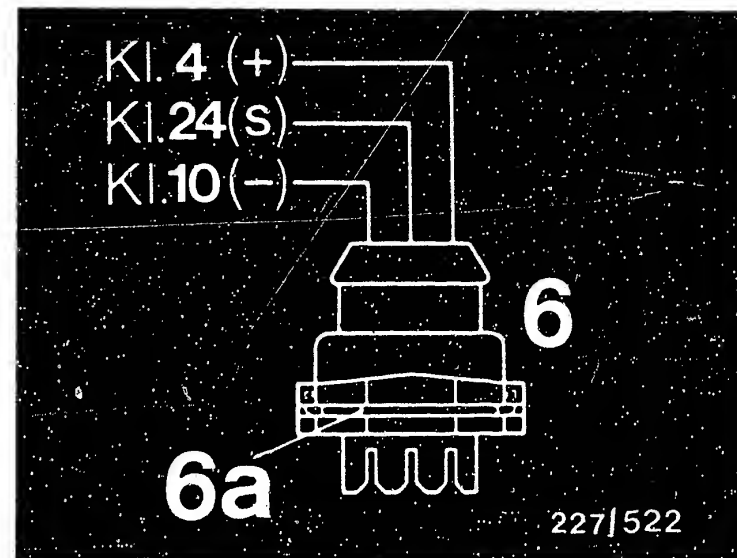
Ohmmeter must in each instance indicate approx. 0 Ω (continuity).

Eliminate any break.

If there was no break found, take out and replace the electronic ignition control unit.

yes

Continued on E13/E14

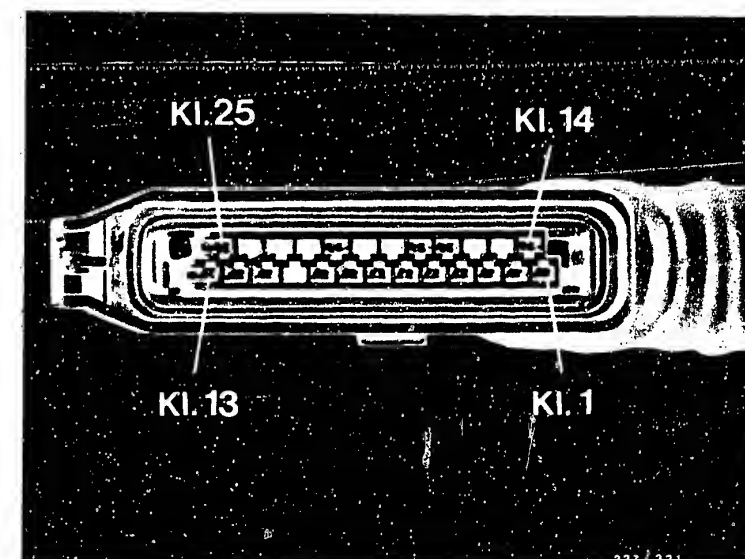


6 = Ignition distributor plug

6a = Wire socket lock

KI.= Term.

Electronic ignition control unit plug



E11

Trouble-shooting plan

Peugeot



E12

Trouble-shooting plan

Peugeot



yes

Check the operation of the magnetic pulse generator.

The electronic ignition control unit and ignition distributor plugs are plugged in.

Shove back the rubber sleeve on the ignition distributor plug.

Connect the oscilloscope in the "special" program switch setting according to operating instructions.

For example, MOT 201:

Red terminal to ignition distributor plug
Term. 24 (measuring signal).

Black terminal to vehicle ground.

Start the engine.

The oscilloscope must show a rectangular pulse.

See the figure at the bottom.

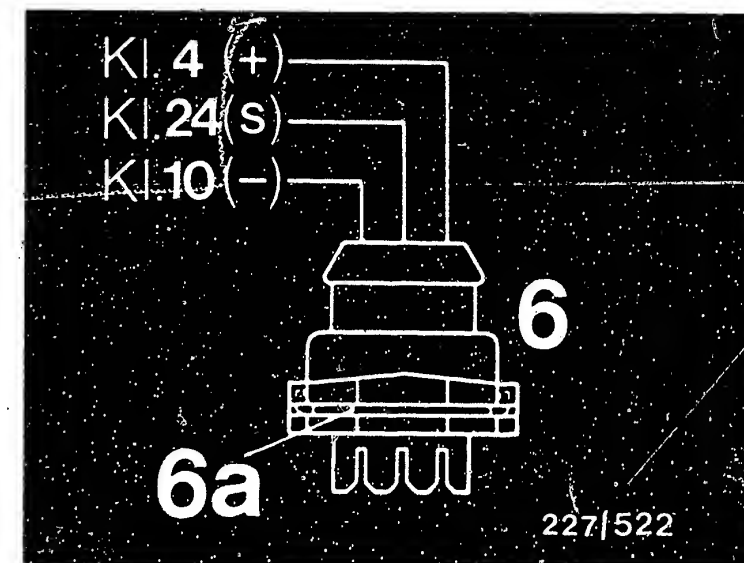
Is there a rectangular pulse?

no

Take out and replace magnetic pulse generator and/or the ignition distributor.

yes

Continued on E15/E16

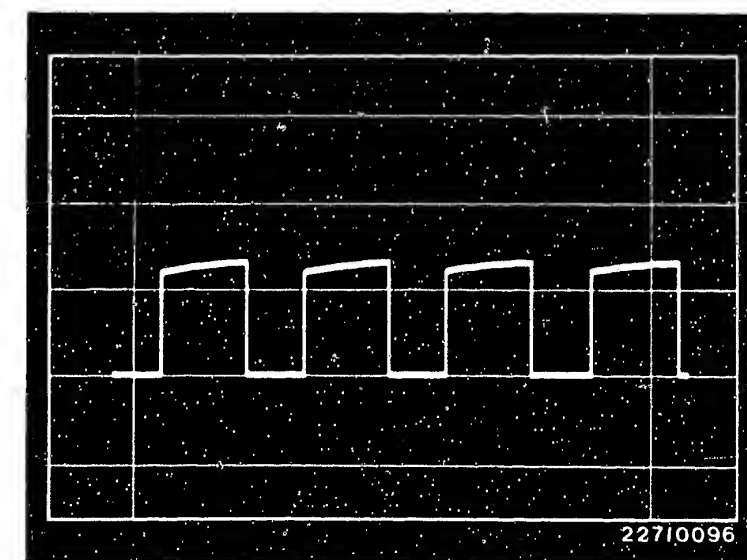


6 = Ignition distributor plug

6a = Wire socket lock

K1.= Term.

Rectangular pulse



E13

Trouble-shooting plan

Peugeot



E14

Trouble shooting plan

Peugeot



yes

Check the electronic ignition control unit.

Electronic ignition control unit and ignition distributor plugs are plugged in.

Connect the oscilloscope in the "special" program switch position according to operating instructions.

For example, MOT 201:

The red terminal one after another to the disconnected trigger box plug terminals 5 and 6 (measuring signal).

Black terminal to vehicle ground.

Start the engine.

The oscilloscope must show a rectangular pulse at both terminals.
See figure at bottom.

Is there a rectangular pulse present?

no

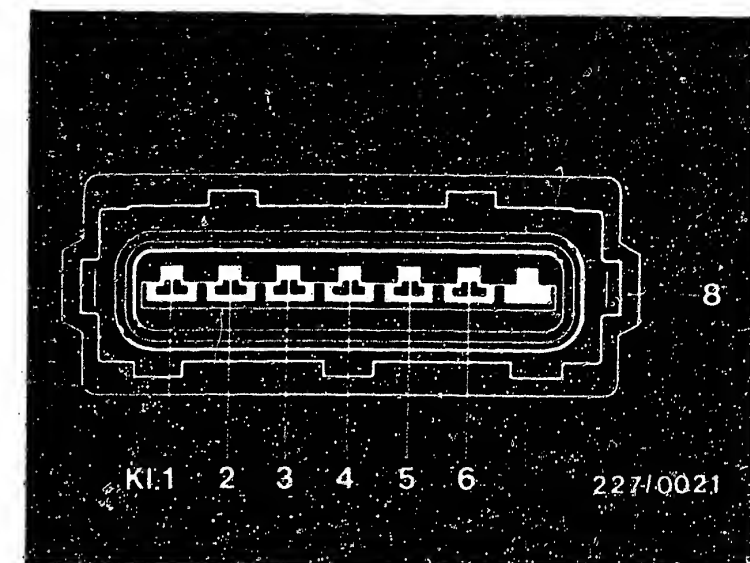
Switch off the ignition.

Unplug the ignition distributor and the electronic ignition control unit plug.

yes

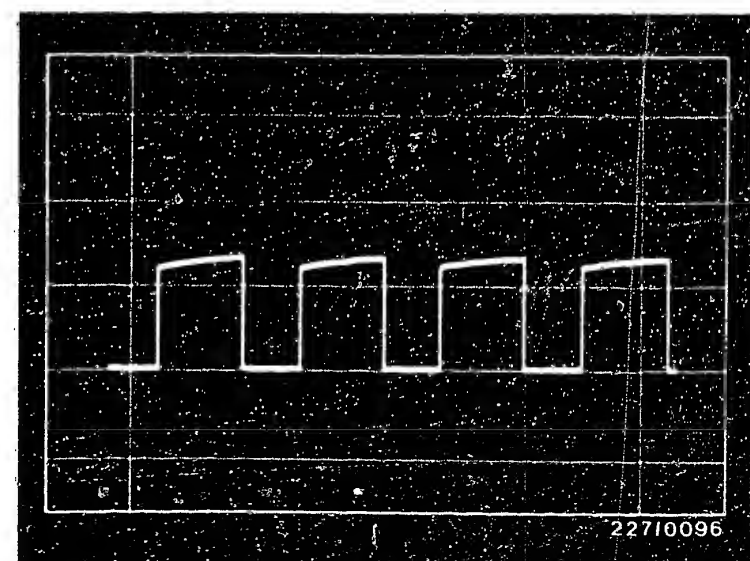
Continued on E19/E20

Continued on E17/E18



8 = Ignition trigger box plug
K1. = Term.

Rectangular pulse



E15

Trouble-shooting plan

Peugeot



E16

Trouble-shooting plan

Peugeot



Continued

Connect ohmmeters one after another to:

Ignition trigger box plug

Term. 5
Term. 6

and
and

Electronic ignition
control unit plug

Term. 16
Term. 16

Ignition distributor plug

Term. 24

and

Electronic ignition
control unit plug

Term. 24

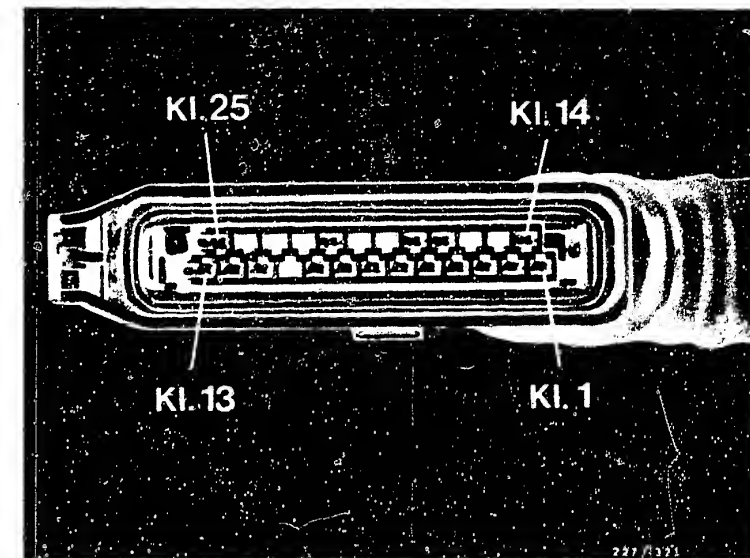
In each instance, the ohmmeter must indicate
approx. 0 Ω (continuity).

Eliminate any break.

If there was no break found, take out and replace
the electronic ignition control unit.

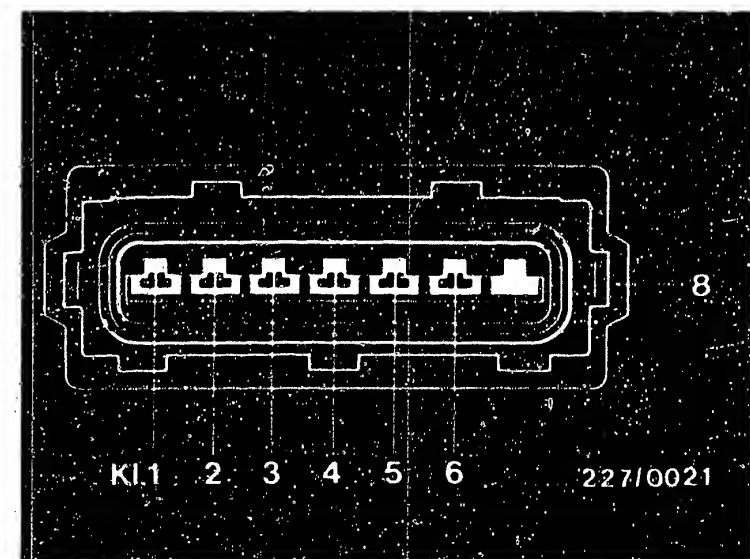
yes

Continued on E19/E20



Electronic ignition control unit plug
KI. = Term.

8 = Ignition trigger box plug



E17

Trouble-shooting plan

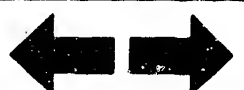
Peugeot



E18

Trouble-shooting plan

Peugeot



yes

Check the ignition coil.

Visual inspection:

Check that the plug is there (see figure) and that no sealing compound has come out.

Electrical test:

Ignition coil, primary
(Term. 15 and Term. 1) 0.7...1.2 Ω
(Take into consideration resistance of test lead and test prods).

Ignition coil, secondary
(Term. 1 and Term. 4) 6.9...11.9 k Ω

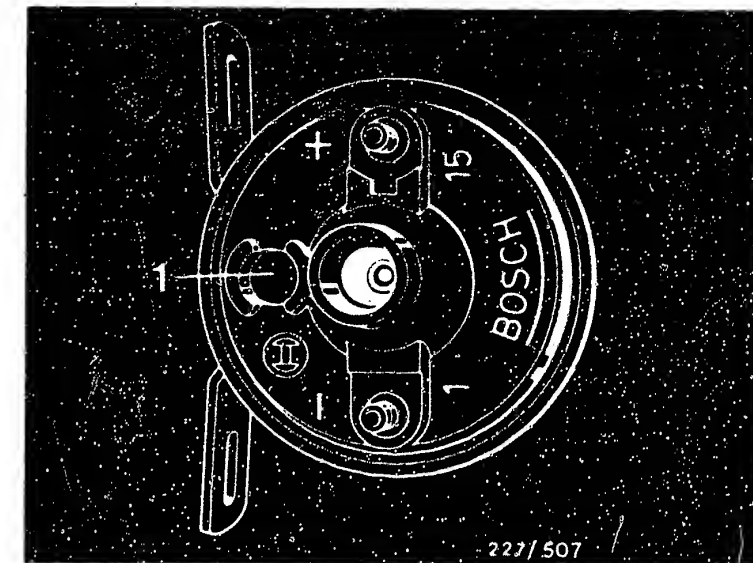
Is the plug there, and is it true that no sealing compound has come out?

Is the value for resistance O.K.?

no

1. If the plug is not there, and/or if sealing compound has come out, take out and replace the ignition trigger box and the electronic ignition control unit, as well as the ignition coil.

2. If the resistance values are not O.K., take out and replace the ignition coil.



1 = Plug

yes

Take out and replace the ignition trigger box.

Testing completed.

Tests from B 17 on not necessary.

Note:

If the customer complaint has still not been corrected, then either additional possible defects in the fuel system, or is the engine not in proper mechanical order?

E19

Trouble-shooting plan

Peugeot



E20

Trouble-shooting plan

Peugeot



After-sales Service

Technical Bulletin

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22

Danger of Accident on Semi-conductor Ignition Systems

VDI-4-222/102 B

11.1976

Please be sure to pass this bulletin on to your employees for their attention.

The increased demands made on their ignition systems by modern engines, and the wish for freedom from maintenance, led some time ago to manufactures starting to equip their vehicles with semi-conductor ignition systems as original equipment. In most cases the performance of nearly all makes of such systems is higher than that of conventional systems, and further improvements are to be expected. This means that semi-conductor ignition systems have reached the point where contact with "live" parts or contacts (whether on the primary side or the secondary side) can prove fatal.

In this connection we should like to point out to you that the laws valid in your country regarding work on high-voltage systems must be adhered to when working on, or testing, semi-conductor ignition systems.

As a matter of principle, when working on such ignition systems the ignition is to be switched off. Included in such work are the following operations:

- Connection of engine testing equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacement of ignition system parts (spark plugs, ignition coil, ignition distributor, H.T. ignition cables etc.).

If it is necessary to switch on the ignition in order to test the system or make adjustments on the engine (to the carburetor for instance), then lethal voltages are present throughout the entire system.

This means that the danger of accident exists not only at individual components in the system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also at the wiring harness (e.g. connection for the tachometer, diagnostic connector), on terminals, and on test equipment.

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N1

Technical Bulletin

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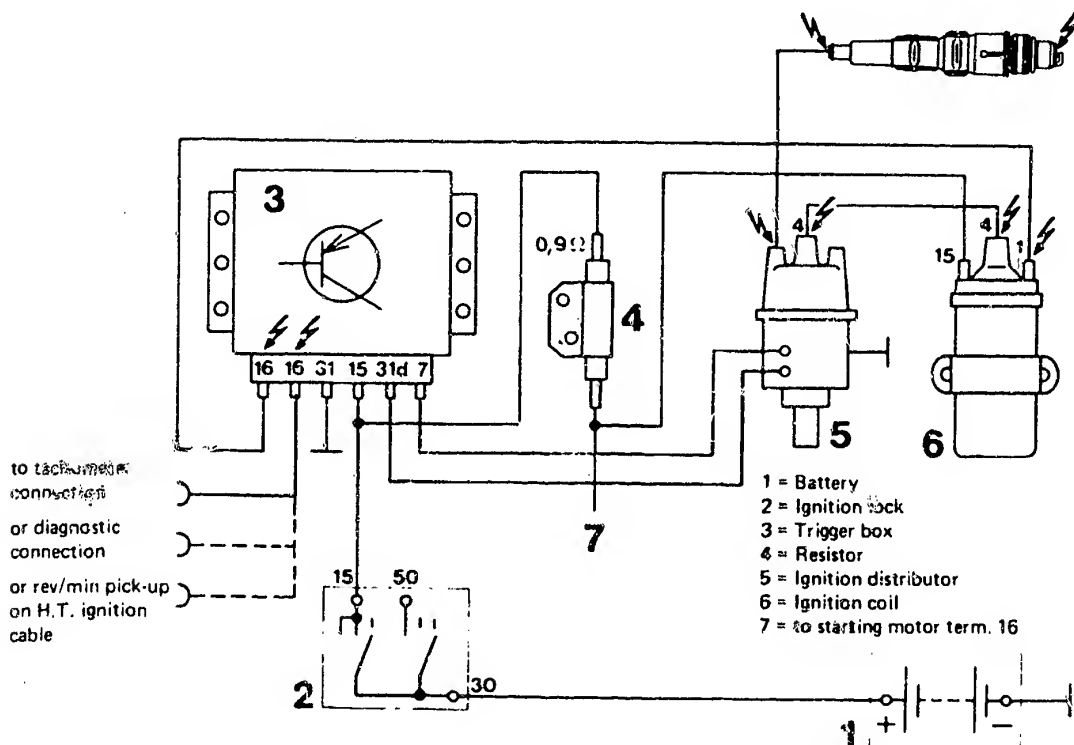


In addition, in the case of the capacitor-discharge ignition system (CDi), danger of accident is also present under the following circumstances:

- Operation of the trigger box without the ignition transformer.
- At the trigger box, (removed), relatively soon after it has been switched off (capacitor discharge).

Below is a typical terminal diagram of a semi-conductor ignition system, the danger points are marked with red high-voltage arrows. We would point out that all semi-conductor ignition systems, even the older ones, are to be regarded as dangerous in the sense as defined by this bulletin.

Please address any queries or comments concerning the contents of this publication to our representative in your country.



Terminal diagram



After-sales Service

Technical Bulletin

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EFFECTS OF ELECTRICAL AND ELECTRONIC
SYSTEMS ON HEART PACEMAKERS

VDT-I-227/107 En

1.1981

e.g. ignition systems, Jetronic, Motronic, ABS

Please ensure without fail that this Bulletin is passed on to your employees for their attention!

We have often been asked by some of our customers whether or not patients with heart pacemakers are endangered in any way by ignition systems. This theme was recently the subject of an examination carried out by the Ignition System Development Department of Robert Bosch GmbH in conjunction with Dr. Thull, lecturer at the Central Institute for Biomedical Technology at the University of Erlangen-Nürnberg and Biotronic GmbH & Co. of Berlin, a manufacturer of heart pacemakers. The magazine "Biomedizinischen Technik" (5/80) listed the results.

The most important discoveries in this practice can be summarized from the examination report as follows:-

1. Heart pacemakers corresponding to the latest state of the art are not affected by radiation (electromagnetic fields) from ignition systems.
2. With a stationary engine and the ignition switched off the heart pacemaker is not affected by any part of the ignition system, even when unintentionally touched. Maintenance work in the engine compartment, for example, can then be carried out without any danger.
3. With the engine running or stationary with the ignition switched on, touching current-carrying parts of the ignition system, as well as parts of any other electrical system, presents a certain danger for everybody. The heart pacemaker can here be affected under certain conditions (voltage, current and frequency).
Patients with heart pacemakers should therefore at all costs avoid touching current-carrying parts of electrical systems.
4. Furthermore, patients with heart pacemakers are more inclined to psychic shock effects than other people, even when they receive just a harmless electric shock, because many such patients are conscious of the increased danger to the cardiac activity.

We therefore consider it inadvisable for patients with heart pacemakers to be employed in workshops or on vehicles where ignition systems are being tested or repaired. If any members of your staff have heart pacemakers please carry out the necessary measures.

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We would like to add that heart pacemakers are not expected to be affected in any way by interference from other electronic products and systems which we manufacture, such as the Antiskid System (ABS), Jetronic, Motronic, because the much greater radiation intensity of the ignition systems examined in normal use has not caused any interference to heart pacemakers corresponding to the latest state of the art.

If you should receive questions on this matter from customers, please inform them accordingly.



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BREAKERLESS TRANSISTORIZED IGNITION SYSTEM

22

Warranty note

VDT-I-227/103 En
3.1979

Hybrid construction trigger boxes
0 227 100 100 for ignition distributor
with Hall generator (TCI-h)
0 227 100 102 for ignition distributor
with induction-type
pulse generator (TCI-i)

Apart from the well-known TCI trigger boxes 0 227 100 0.., trigger boxes of hybrid construction have been fitted as standard since 9.78 (Fig. 1).

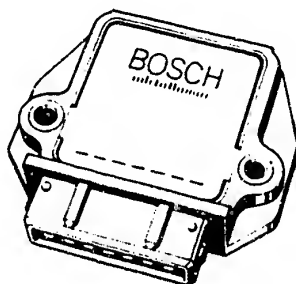


Fig. 1

Warranty procedure

If the complaints are justified, all these hybrid trigger boxes are to be sent, along with completed warranty documents, to your authorized representative for forwarding to the following address:

ROBERT BOSCH GMBH
KH/LAV - Aüspackraum

zur Weiterleitung an K1/VAK 21

D-7000 Stuttgart 30

This instruction remains valid until further notice.

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N5

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Peugeot



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Technical Bulletin

13-39

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KNOCK SENSOR

0 261 231 ..

VDT-I-227/110 En

3.1983

Procedures for after-sales service

Description

The knock sensor contains an active piezoceramic element. It is screwed to a chosen position on the engine block and sends a structure-borne signal which is processed further by an electronic control unit.

User

Saab is the first vehicle manufacturer to use the knock sensor which is being fitted to various turbo vehicles.

Components

Knock sensor 0 261 231 ... *



* The exact part numbers are given on the appropriate vehicle-equipment microcards AA... .

Service/exchange parts

The knock sensor is a service part and is supplied by Bosch. The remaining components of the knock control are products made by other firms.

Technical documentation

Technical bulletin "New product" VDT-I-227/10 En.

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Technical Bulletin
Peugeot



Training

Special training is not necessary.

Retrofitting

The knock sensor is not intended for retrofitting.

Warranty procedure

Components on which a claim is being made should be sent for inspection during the warranty period to our representative in your country. He should forward it to:

ROBERT BOSCH GMBH
KH/LAV - Auspackraum
zur Weiterleitung an K1/VAK2
7000 Stuttgart 30
Federal Republic of Germany

This regulation applies until further notice.



After-sales Service

Technical Bulletin

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NEW DESIGNATIONS FOR IGNITION SYSTEMS

VDI-I-227/108 En

1. 1983

The introduction of new ignition systems has made it necessary to reclassify all designations.

The designations listed below will be used immediately in KH workshop and sales literature.

Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Coil ignition	SZ (CI)	-----	Mechanical (breaker points)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized coil ignition	TSZ-K (TCI-c)	K-breaker-triggered	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Trigger box with conventional circuit techniques	TSZ-I* (TCI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
	TSZ-H	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized ignition	TZ-I* (TI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
(Trigger box in Hybrid technique)	TZ-H* (TI-h)	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)

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Technical Bulletin
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Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Breakerless semiconductor ignition with or without knock control	EZ EZ-K	- K=Knock control	Electronic (trigger box or control unit)	Electronic (control unit)	Mechanical (ignition distributor or high-voltage distributor)
Distributorless ignition with or without knock control	VZ VZ-K	- K=Knock control	Electronic (control unit)	Electronic (control unit)	Electronic (dual-spark ignition coil, or 1 ignition coil for each spark plug)

*Note: The ignition system can also be equipped with a DLS unit (digital idle stabilization) or with an ELS unit (electronic idle stabilization) or with an ESV unit (electronic ignition retardation).



After-sales Service

Motor Vehicle Service Information

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INCORRECT DISPLAY OF ROTATIONAL SPEED AND
DWELL ANGLE ONLY WITH TRIGGER BOXES
0 227 100 ... (TCI-i, TCI-h) WITH CURRENT
LIMITATION

VDT-I-Gen. 030 En
6.80
Supersedes Ed. 3.80

For additional information see VDT-I-Gen. 032 En

1. General

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle when testing the ignition system. However, there is no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Incorrect displays may occur with the testers listed below:

MOT 001.00}	Rotational-speed	KTE 001.00
001.01}	display O.K. with these	001.02
001.02	testers	001.03
001.04		
002.00		

By now, the following vehicles may be fitted with breakerless ignition systems with current limitation:

Audi	(Bosch/Fairchild-ignition system)	Mazda	(Mitsubishi ignition system)
BMW	(Bosch ignition system)	Mitsubishi	(Mitsubishi ignition system)
Citroen	(Delco ignition system)	Nissan-Datsun	(Hitachi ignition system)
Fiat	(Delco ignition system)	Peugeot	(Bosch ignition system)
Ford	(Delco ignition system)	VW	(Bosch/Fairchild ignition system)
General-Motors	(HEI-ignition system)	Bosch transistorized ignition system for retrofitting 0 227 100 920	

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N10

Automotive-Service-Information

Peugeot



2. Test instructions

2.1 Rotational speed

Incorrect rotational-speed display can be recognized as follows:

If one starts at the idle speed and slowly increases the engine speed, then the incorrect display can be recognized by an abrupt reduction in the rotational-speed display (e.g. from 2400 min⁻¹ to 1200 min⁻¹).

It is, however, possible to attain correct rot.-speed measurements as follows:

Connect a ballast resistor of 0.9 or 1.0 Ohm (see Fig.) in series in the line to term. 15 of the ignition coil (take care not to cause a short circuit). After the rotational-speed measurement, the ballast resistor must be removed (otherwise starting difficulties and misfiring). Connect tester as per operating instructions.

Suggestion for user manufacture

Required parts:

- 1 ballast resistor 0.9 Ohm
or
- 1 ballast resistor 1.0 Ohm
- 2 blade receptacles e.g.
- approx. 0.2 m cable, 1.5 mm² e.g.
- 2 insulated clips

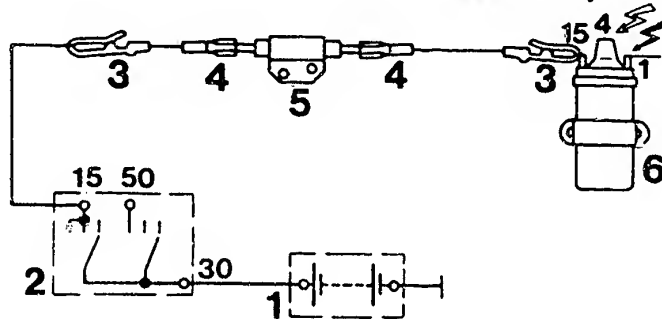
Part No. 0 227 900 002

Part No. 0 227 900 101

Part No. 1 901 355 881

Part No. 6 210 150 150

Commercially available



- 1 = Battery
- 2 = Ignition switch
- 3 = Clips

- 4 = Blade receptacle
- 5 = Ballast resistor
- 6 = Ignition coil

⚡ approx. 400 V

⚡ approx. 25 kV

2.2 Dwell angle

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.

2.3 Ignition point

Is displayed correctly. Connect tester as per operating instructions.



After-sales Service

Motor Vehicle Service Information

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MOTORTESTER CONVERSION

VDT-I-Gen. 032 En
6.80

Incorrect display of rotational speed,
dwell angle and ignition point
only with trigger boxes
0 227 100 ... (TCI-i, TCI-h) with current
limitation

For additional information see VDT-I-Gen. 030 of 6.80

Re.: Motortester EFAW 268
268 S 10
269
214 B
AE 2000

1. General

Please make sure that the above-mentioned motortesters in your workshop and at your customers (e.g. motor vehicle workshops, oil companies, gas stations, vocational schools etc.) are converted. The conversion is subject to payment and is carried out by the K7 after-sales service of the responsible BG. The standard time is 15 work units (with fitting of switch).

2. Why motortester conversion?

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle as well as to incorrect triggering of the meter when testing the ignition system. There is, however, no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Since, with the above-listed motortesters, the timing light is triggered by the signal path dwell angle - meter, this incorrect triggering also leads to incorrect flashing and thus to an incorrect display of the advance angle.

3. Conversion measures

The situation is to be remedied by modifying the wiring of the testers so that the timing light is triggered by the clamp-on induction pickup and the pulse shaper stage.

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N12

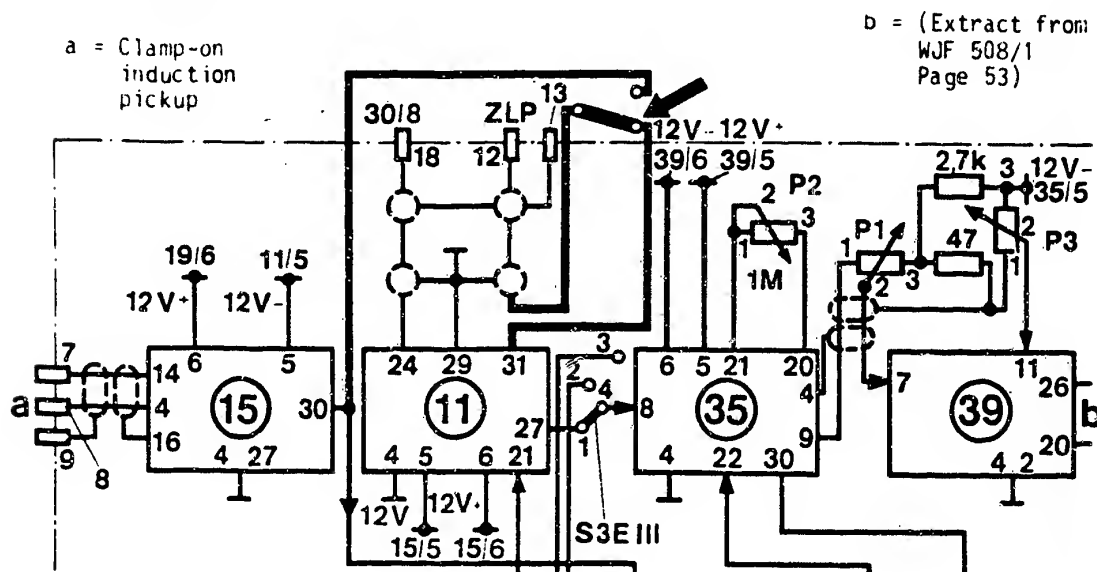
Automotive-Service-Information

Peugeot



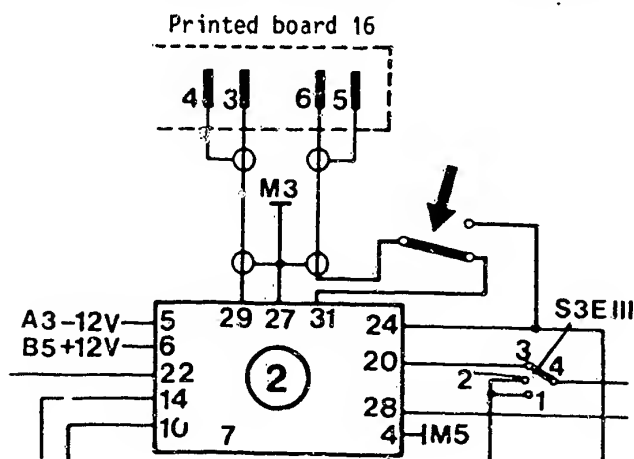
Remove the line of the ZLP* from pin 31 of printed board 11 (coupling stage) and connect to pin 30 of printed board 15 (pulse shaper stage) via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 11 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.

* ZLP = timing light



EFAW 214 B

Remove the line from terminal 6 of printed board 16 to pin 31 of printed board 2 (coupling stage) and connect to pin 24 of the same printed board via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 2 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.



By fitting the switch with change-over contact in the front panel of the motor-tester, it is possible to switch over from standard ignition systems to those with current limitation. We recommend that the switch positions be marked correspondingly: e.g. "standard" - "current limitation". These conversion measures have already been published in the K7 information sheet KJF 28/7911.



4. Test instructions

4.1 Standard ignition systems

Switch position: "standard"

All other tester connections as per operating instructions.

4.2 Ignition systems with current limitation

Switch position: "current limitation"

In order to trigger the timing light, the induction-type pulse generator (clamp-on pickup or red pickup) must always be connected during the measurement.

The selector switch for ignition systems built into the motortester must be switched to standard coil ignition (not to TCI) with these ignition systems.

All other tester connections as per operating instructions.

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.



After-sales Service

Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

TESTS ON ELECTRONIC IGNITION SYSTEMS
(TCI, TZ)
TESTER INSTRUCTIONS

VDT-I-Gen. 035 En
3.1981

The following tests are listed in older and current Tester operating instructions or in Trouble-shooting with the oscillograph:

- "Separate ignition coil test" (concerns EFAW 213, 214, 268, AE 2000).
- Calculating the "ignition voltage reserve" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).
- "Intensified insulation test" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).

Nowadays transistorized ignition systems deliver more than 30,000 V secondary voltage.

To avoid damage to ignition coil, ignition cable and ignition distributor by voltage flashovers, the tests listed above should not be carried out on transistorized ignition systems.

The contents of this Service Information has already been published in the K7-Information K7-VJF 17/8012.

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